ST ENGINEERING
LIBRARY

NOV 2 8 1947

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 125, No. 21 NOVEMBER 20, 1947

WOOD PULP

G

Established 1886

"Hear ye not the hum of mighty workings!"
JOHN KEATS

Use of paper both charts and makes the great roadway of civilization's advance. Since the turn of the century paper consumption in the United States has increased sevenfold. The ratio of the American paper consumption to world consumption graphically illustrates the vital role that paper plays in the American way of life.

We salute the men of the Pulp and Paper Industry who have made possible "the hum of mighty workings" in one of America's great industries.

GOTTESMAN & COMPANY
— INCORPORATED —
22 EAST 40th STREET • NEW YORK 16, N. Y.
EUROPEAN OFFICES: Birger Jarlsgatan 8, Stockholm, Sweden

75th ANNIVERSARY

OLDEST MANUFACTURER O
MODERN SUCTION ROLL

Photo in circle shows a modern Downingtow Suction Press Roll with suction connection thru hollow leg at the front end. Picture below show two pioneering designs of Downingtown Suctio Presses which were installed 21 years ago Scott Paper Co., Chester, Pa. These rolls are run ning today. Scott Paper Co. ordered their firs Downingtown Suction Press in 1925. They no have 11 in operation.... Downingtown Mfg. Co. Downingtown, Pa.

D

Most Complete Line of

SUCTION ROLLS

Suction Couch

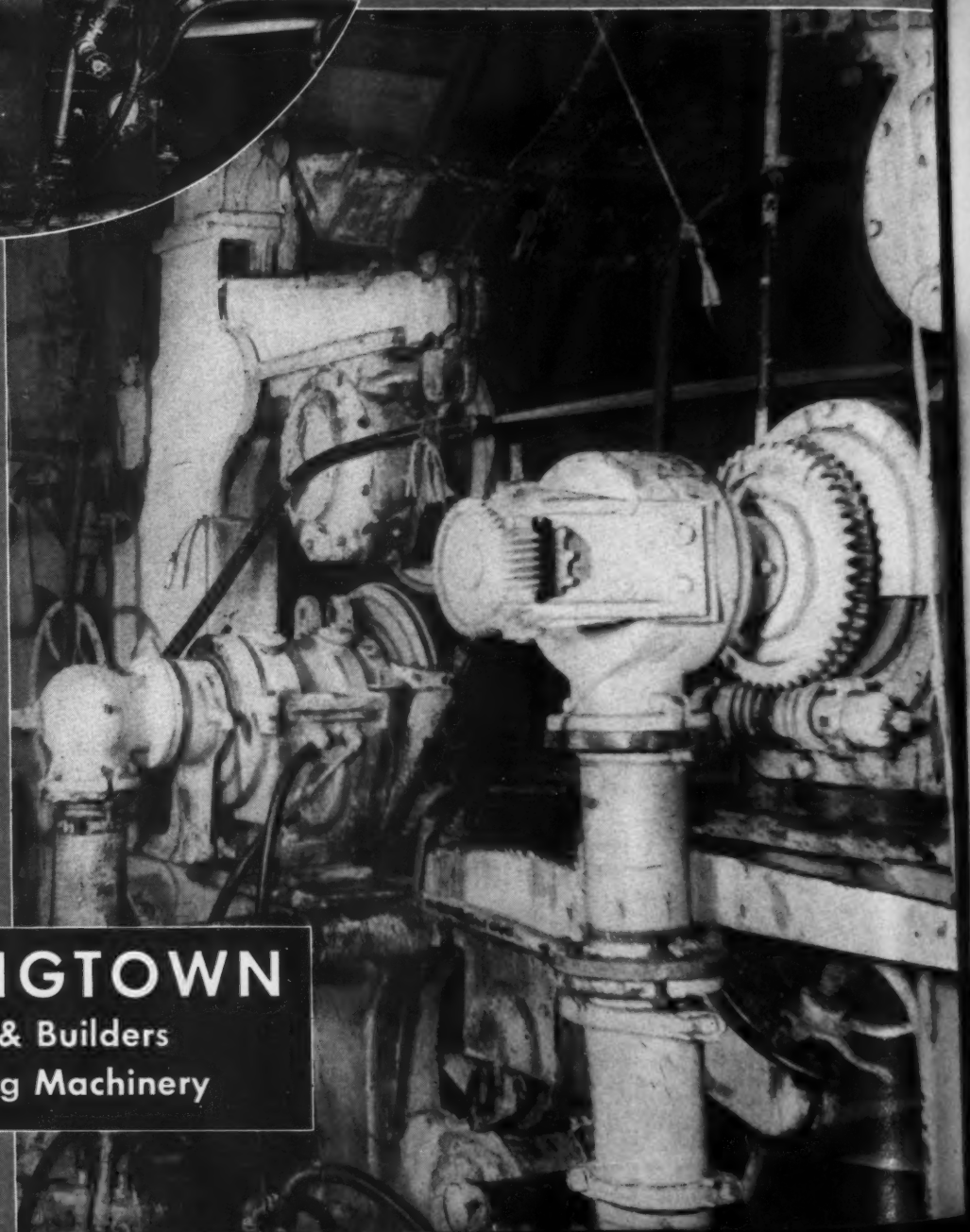
Suction Press

Suction Felt Cleaning

Suction Extractor

Suction Drum

Suction Cylinder Couch



DOWNINGTOWN

Designers & Builders

Paper Making Machinery

IN THIS ISSUE

NOVEMBER 20, 1947

Midwest Lays Plans Tight Year Ahead	9	Australian Notes	24
Harriman Report Declares U.S. Needs All Its Pulp	9	Labor Shortage Bars Norwegian Increase	24
Westvaco Names Two Assistant Managers	10	Nashua's Thermo-Kote Uses Twin Forces	26
Ralph Luff Talks To Eastern Sapeyes	10	Boston Trade Dines At Parker House	26
Union Bag & Paper Buys Trenton Plant	12	IMPORTS	32
Pacific Mills Scans Nascall Basin Site	12	OBITUARY	34
Gair Completes Plant For Boston Corrugated	14	TRENDS	36
Bathurst May Try Artificial Rain	14	PRICES	38
FINANCE	16	MARKETS	40
Brotherhood Lets Building Contract	18	EQUIPMENT AND SUPPLY NEWS	42
Thilmany Foremen Hold Safety Dinner	18	PRODUCTION RATIO REPORT	46
Seek Flood Control On Fox And Wolf	18	EDITORIAL	47
Gummed Industries Elects Frank O'Neill	20	CLASSIFIED ADS	64
Survey Highlights Of Waxed Paper Meeting	20		
Newsprint Use Runs 16 Per Cent Ahead	22		
British Editor Tells Of Newsprint Lack	22		
Newsprint Production Continues Advance	22		

Technical Section ("TAPPI")

The Description and Specification of Color	49
Studies of Rosin Sizing	54

INDEX TO ADVERTISERS ON PAGE 78

Volume 125 — **Number 21**

Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

GEO. E. LOCKWOOD, *President & Treasurer*
ARTHUR E. GORDON, *Vice-President*
JOSEPH P. HORGAN, *Secretary*
W. L. COOK, *Editor*
E. P. MCGINN, *Technical Development Editor*
E. P. NUTTALL, *Assistant Editor*
R. G. MACDONALD, *"TAPPI" Editor*
F. B. GROSSE, *Production Manager*

Eastern Representatives

BRUCE E. BROWN
15 W. 47th St., New York 19, N. Y.; Phone BRyant 9-0860
EDWARD H. DOERING
15 W. 47th St., New York 19, N. Y.; Phone BRyant 9-0860

Mid-Western Representatives

H. K. VINTON
30 N. Dearborn St., Chicago 2, Ill., Phone Central 2784
FRANKLYN H. OLSEN
1674 Sunview Rd., South Euclid, Cleveland, 21, Ohio; Phone: Hillcrest 1124-W

Pacific Coast Representatives

ROY M. MCDONALD & CO.
San Francisco, 4, Cal.; 564 Market St.
Los Angeles, 5, Cal., 639 S. Wilton Pl.; Seattle, 1, Wash., First & Virginia

Southern Representative

EDWARD M. BUCK
P. O. Box 2856, Dallas 1, Texas

Representative for Denmark, Norway, Sweden and Finland

OXFORD TRADING AKTIEBOLAGET
Bibliotekgatan 6-8, Stockholm, Sweden

Subscriptions: *(Payable in advance)* By the year, $5.00; Single Copy 15 cents *Postage Extra: To Canada, $2.00; To Other Foreign Countries, $3.50.*
Member Audit Bureau of Circulations.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL, *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL *Feb. 19, 1926.*

All rights to the above titles reserved.
PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*
Copyright 1947 by the Lockwood Trade Journal Company, Inc. The contents of PAPER TRADE JOURNAL *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*
PAPER TRADE JOURNAL *is indexed in Industrial Arts Index.*

CALENDAR OF COMING EVENTS

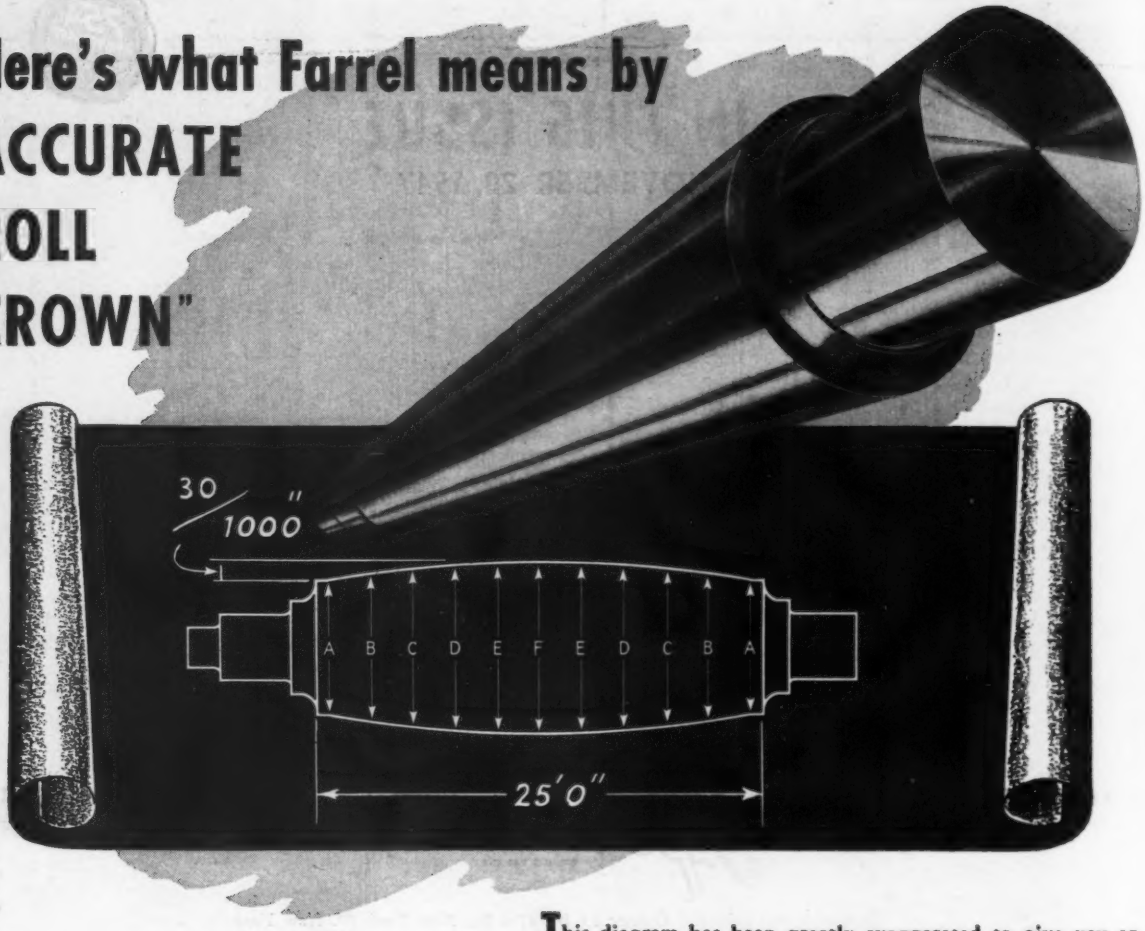
January 28-30—Technical Section, Canadian Pulp and Paper Association, Annual Meeting, Mount Royal Hotel, Montreal, P. Q.

February 23-26, 1948 — Technical Association of the Pulp and Paper Industry, Annual Meeting, Hotel **Commodore, New York City.**

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

Here's what Farrel means by "ACCURATE ROLL CROWN"



This diagram has been greatly exaggerated to give you an idea of the precision of crown you can expect in a Farrel calender roll.

It shows how a crown of sixty thousandths of an inch—the amount calculated to be necessary in this case—is distributed along the true deflection curve from A to F. This precisely graduated crown, exactly symmetrical on both halves of the roll, assures correct compensation for the pressure of the rolls above it in the calender stack.

Farrel has developed the specialized skill and equipment required consistently to produce accurately shaped rolls, over nearly a century of making rolls of all types and sizes. The Farrel two-wheel, swing-rest roll grinder with the Farrel automatic crowning device, which unerringly produces the correct shape and amount of crown; and Farrel roll calipers for precise checking of dimensions, are two pieces of equipment used in *America's largest specialty roll shop* at Ansonia to produce accurately crowned rolls.

Write for further details on rolls or on any of the other equipment listed on this page. FB-382

FARREL PAPER MILL MACHINERY

ROLLS: Chilled Iron, Dry Sand, Meehanite, Alloy Iron, Steel, Chromium Plated
FOR: Calender Stacks
Board Calenders
Super Calenders
Glassine Calenders
Friction Rolls
Breaker Rolls
Smoothing Rolls
Coating Rolls
Creping Rolls
Plater Rolls
Cutting Rolls
Paraffining and Waxing Rolls
Saturating Rolls
Silicating Rolls
Miscellaneous Special Purposes
CALENDERS: Paper and Board
GRINDING MACHINES: Roll
CALIPERS: Roll
GEARS, CUT: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
SPEED REDUCING GEAR UNITS
SPEED INCREASING GEAR UNITS
FLEXIBLE COUPLINGS

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONN.

Plants: Ansonia, Derby and Stonington, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, Stonington, New York, Pittsburgh, Akron, Chicago, Los Angeles, Tulsa, Houston, Charlotte

Farrel-Birmingham

Paper TRADE JOURNAL

VOL. 125, NO. 21 REG. U.S. PAT. OFF. NOVEMBER 20, 1947

Midwest Lays Plans Tight Year Ahead

CHICAGO—A survey of paper trade offices indicates that improvement in the demand and supply problem expected for possibly the last quarter of 1948, might be postponed much longer. The industry had indicated that it might expect some decline in business in the latter half of next year and that as a result, the demand might decline somewhat. However, business leaders here feel that the Marshall Plan will be accepted in Congress, in whole or in part, and that sufficient exports will result to cause high volume, higher wages, full employment and, in general, the peculiar type of prosperity which America is now enjoying.

Trade leaders here do not expect productivity in the industry itself to make any great strides in 1948 due partly to the capacity production already and partly to the difficulties in securing materials for expansion and construction of new mills.

Thus, the Chicago trade continues its quota system as far as the mill representatives are concerned, and the paper jobbers locally do their level best to meet continued heavy demand. Here and there, in isolated instances such as in the rag content papers, there are reportedly indications that the supply picture is much improved. But in groundwoods and allied lines Chicago merchants and sales represenatives report continued tightness on all sides.

Mill buying prices for waste paper were unchanged, but there were local reports that the market was showing a slightly better tone. Colder weather tended to curtail incoming shipments which were reportedly easing up the distressed material situation. Mills were paying $13 to $14 a ton for No. 1 mixed, $17 to $19 for No. 1 old news and $23 to $27 for No. 1 old corrugated.

Fox River Plays Host To Credit Unions

APPLETON, Wis. — "An Effective Credit Union Promotion Program" was the topic at a meeting of the Outagamie County chapter of credit unions Monday evening, November 17, in the recreation room of the Fox River Paper Corporation, with the credit union of that mill as host. Entertainment and refreshments were provided by the latter. Tom Murphy is president of the Fox River mill credit union.

Harriman Report Declares U. S. Needs All of Its Pulp

R.F.C. Opens Offices To Handle Maine Loans

WASHINGTON—The Boston Office of the Reconstruction Finance Corp. has been authorized to accept applications for loans from those who sustained losses resulting from Maine forest fires recently. Offices have been established at Biddeford and Augusta for this purpose. Additional offices will be established according to need indicated after a survey of the forest fire area by the Boston agency. Individuals, partnerships, corporations, municipalities and political subdivisions of the State of Maine or its public agencies are eligible applicants, said RFC.

ROBIN A. CAMPBELL

Formerly assistant general manager of the Blandin Paper Company, who has joined the staff of the Minnesota and Ontario Paper Company, as production assistant to the vice-president in charge of Production. A graduate of Syracuse University with a degree in the Chemistry of Pulp and Paper, Campbell has been affiliated with the paper company for over fifteen years.

Mr. Campbell served as Naval Supply Corps Officer during World War II both with a naval base in the southwest Pacific and in Washington, D. C.

WASHINGTON—The United States is definitely not in a position to export any additional pulp to Europe nor to accept curtailed pulp imports, an advisory business-government committee under Secretary of Commerce Harriman, has reported.

The report comprises two bulky volumes, and apparently analyzes an earlier two-volume report by a European committee under British Prime Minister Ernest Bevin, which Secretary of State Marshall transmitted to the President some time ago, and which gave this country a preliminary estimate of European requirements in all categories, essential to economic recovery there. European requirements of pulpwood were mentioned in the Bevin report, with a notation that even in Europe, they had been considered so far in excess of possible supplies that they had been scaled down 20 per cent before being sent to this country.

The Harriman committee now seems to have answered the suggestion from abroad that this country and others producing pulp could bolster European needs in 1948-51. Referring to pulp and paper requirements abroad, the committee said:

"To meet pressing European needs for paper and paper products during the interim period of getting European production under way, the least harmful effects would be to increase United States exports of paper and paper products through export priority.

"An increase of our exports by 200,000 to 300,000 tons in 1948 would not seriously affect the United States economy if a fairly wide variety of grades and items were involved. Furthermore demands from Latin America as well as the Orient, such as China and India, may be less in 1948 because of the growing tightness in exchange, so that some margin about the 1946 or 1947 level of paper and paper products exports to those areas might be directed eastward over the Atlantic.

"Supplies of wood pulp and paper in the United States, in general, while greatly improved over last year, are still inadequate to meet all consumption requirements. This shortage condition has existed since the early days

(Continued on page 28)

Westvaco Names Two Assistant Managers

MECHANICVILLE, N. Y. — George N. Hoover, Jr., who has been superintendent of the West Virginia Pulp & Paper Company, paper and pulp mills, has been made assistant manager in charge of all production and operations. Ray A. Stocker has been made assistant manager in charge of business administration and personnel.

Several hundred employes of the company gathered at the Mechanicville Golf Club recently to pay tribute to Thomas M. Stirling, who resigned as general manager. The party was climaxed when Mr. Stirling was presented an autograph book containing the signatures of all mill employes other than office and supervisory employes. He was also presented with a gold watch. Mr. Stirling expressed his heartfelt appreciation for the gifts and briefly reviewed his association with the firm since 1899. He also tendered his appreciation to the employes for their loyalty and cooperation. Among the executives present were Fred A. Coe, S. D. Huff, Earl Hayner, Oliver W. Carlton, D. D. Linehan, Charles M. Wetherbee and Ray A. Stocker.

Jim Sensenbrenner is Made American Paper Vice-President

MILWAUKEE—F. James Sensenbrenner, well known in paper trade circles from his past fifteen years' association with the Kimberly-Clark Company of Neenah, Wis., has become associated with the American Paper Company as vice-president.

Jim Sensenbrenner has had a long association with the paper industry, in both the fine and coarse groups. His background of mill experience from raw materials to finished papers as well as his sales work will make a valuable contribution to his new associates.

Martinelli Will Join Rogers Plastic

SPRINGFIELD, Mass. — Arnold C. Martinelli, sales manager for thermoplastic molding materials at Monsanto Chemical Company, plastics division, will become general manager of Rogers Plastics Corporation, in North Wilbraham, on January 1, the firm revealed this week.

Morriss Joins Eddy Paper

WHITE PIGEON, Mich. — Thomas Morriss, former vice-president of the Central Fibre Products Company, Chicago, is now serving as sales manager of the Eddy Paper Corporation.

ARTHUR P. CHRIST, JR.

Arthur Christ Jr. Forms New Selling Agency

NEW YORK — Arthur P. Christ, Jr., has formed the Christ Paper Products Corporation to act as sales agent for Swedish and domestic mills, distributors of kraft, sulphite and other pulps. together with a general line of paper and paper products. Mr. Christ has been associated with Camp Manufacturing Company, Franklin, Va., during the past eight years. Previously he spent seven years with Union Bag & Paper Corp.

Phillips Succeeds Burns As Brotherhood President

ALBANY, N. Y. — Paul L. Phillips, Voorheesville, was elected president of the International Brotherhood of Paper Makers. He succeeds Matthew J. Burns, who held the post 14 years and was not a candidate for reelection.

Mr. Phillips will assume his duties January 1. Headquarters of the brotherhood is at 30 Sheridan Ave. Mr. Phillips is a native of Camden, Ark., and has served as first vice-president in international headquarters since 1944. He is vice-president of the International Paper Makers' Realty Corporation.

John R. Jones, Troy, was elected first vice-president of the brotherhood and Frank P. Barry, Albany, second vice-president. Joseph Addy, Troy, was reelected secretary-treasurer.

Cloutier Moves Up Kiwanis Club

FORT WILLIAM, Ont. — Charles C. Cloutier, manager of Hudson Paper Company, is now serving as vice-president of the Port Arthur-Fort William Kiwanis Club. He also served as chairman of the committee in charge of arrangements for that organization's Western Canada District Convention.

Ralph Luff Talks to Eastern Sapeyes

NEW YORK—Ralph G. Luff, president of the D. L. Ward Company, Philadelphia paper merchant firm, addressed the Salesmen's Association, of the Paper Industry at Midston House, this week, taking as his subject "The Mill-Merchant Partnership." Chairman pro tem of the meeting was Howard Casey of the Franklin Paper Company.

Luff emphasized the responsibility of the paper merchant both to the mills who supply him and the customers whom he serves. He cautioned that, at what now appears to be the "end of an easy market," attention to inventory control is of paramount importance, citing the experiences of 1919-'20, '31-'32, and '39-'40 to emphasize his point. At the same time, he stressed the fact that American industry today has a world responsibility that is more keenly realized than was the case at the end of World War 1. He also pointed out that in some quarters there is a recently developed sentiment to "buy and buy," on the assumption that conditions in the near future will justify this course, but he cautioned his hearers to watch the price structure and to avoid careless buying. Attendance at the meeting totaled about 70.

Kimberly-Clark Activities Sets Up New Slate

NEENAH, Wis. — The central board of Kimberly-Clark Activities Association has elected Elmer Mokros as president, Cliff Burton as vice-president, and Margaret Stilp as secretary. Dorothy Korotev was appointed treasurer, and renamed to the executive committee were Elmer Sievert and Glenn Smith.

Mokros named Cliff Burton as sports coordinator, Clair Demand as chairman of the children's Christmas party, and Elmer Sievert, Peter Rohe and Cliff Burton to the inventory committee, Sievert being chairman.

The central board voted to buy 20 jerseys for the field service basketball team at Quinnesec.

Mayo and Rogers Join Kimberly-Clark Research

NEENAH, Wis.—Howard A. Mayo and Dr. Sedgwick C. Rogers have joined the staff of the Research and Development Laboratories of the Kimberly-Clark Corporation at Neenah.

Mr. Mayo, a graduate of North Carolina State College, School of Textiles, was formerly associated with the Dan River Mills, Inc., Danville, Va.

Dr. Rogers, who holds degrees from the University of Minnesota and Pennsylvania State College, was previously with the Forest Products Laboratory at Madison, Wis.

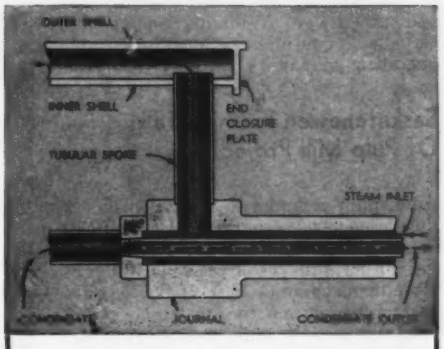
for increased output...reduced costs with

Lukenweld Jacketed Drier Rolls

Increased production at lower cost follows when Lukenweld Jacketed Drier Rolls replace drum-type rolls. Here are 15 reasons why:

1. Welded, double-shell steel plate construction speeds up heat flow, greatly improves heat transfer properties.
2. High strength of rolled steel plate permits safe operation at pressures of 350 psi and higher.
3. Greater steam velocity assures greater steam turbulence in the roll.
4. Steam velocity minimizes possibility of dead steam in the roll.
5. More uniform temperature across the face of the roll.
6. Condensate-removal pipe revolves with roll, gives quick, positive condensate removal.
7. Mechanically safe . . . will not explode.
8. Roll stays round . . . is more dimensionally stable.
9. Smaller bearings may be used . . . lowers power cost.
10. Steel plate construction reduces weight, saves on operating costs.
11. Can be made in a wide range of designs.
12. Sizes from 2 feet to over 18 feet in diameter.
13. Can be designed without bolts, nuts, or siphons to work loose in service.
14. Can be used in the high temperature range that employs high boiling point, heat transfer liquids.
15. Steel plate outer shell provides the soundness required for any type of machine finish.

Bulletin 358 tells the story of Lukenweld Jacketed Drier Rolls . . . shows specific instances where drying rate has been stepped up as much as 50 per cent. Write today for your copy. Lukenweld, division of Lukens Steel Company, 403 Lukens Building, Coatesville, Pa.



Section of a typical Lukenweld Jacketed Drier Roll showing how steam is guided in restricted area between inner and outer shells, providing greater steam velocity and improving heat transfer properties.

Sizes from 2 feet to 18 feet O. D. and over

LUKENS
LUKENWELD DIVISION

LUKENWELD

DRIER ROLLS AND DRYING MACHINERY

Union Bag & Paper Buys Trenton Plant

NEW YORK—Alexander Calder, president and chairman of the board of Union Bag & Paper Corporation, disclosed last week the purchase of the Trenton Container Company and the acquisition of a new factory building near Trenton, N. J., in which the equipment of the Trenton Container Company, and additional facilities will be installed.

"These acquisitions," said Mr. Calder, "are part of a program now nearing completion, to establish corrugated container factories in the country's important consuming centers. These factories will supplement the main corrugated box-making operations of Union Bag & Paper, located at Savannah, Ga."

The new factory building near Trenton, is a modern one-story structure of brick and steel sash construction, covering more than 100,000 square feet of floor space. The building, completed within the past two years, will be enlarged to 130,000 square feet, and the equipment of the Trenton Container Company will be increased to bring the capacity of the new plant up to approximately 3,000 tons a month.

"Starting at once," Mr. Calder added, "the operations of the present Trenton Container Company factory will be available to service our customers in the metropolitan New York–Philadelphia area. The former owners of Trenton Container Company, Messrs. R. W. Williams and E. E. Gaus will continue as local sales and operating managers."

Saskatchewan Premier Talks Of Pulp Mill Project

ROSETOWN, Sask. — Manufacture of wood pulp occupies a definite place in the long-term program of the Saskatchewan government for the processing of natural resources. Speaking in Rosetown, Premier T. C. Douglas said that as soon as the province could establish a pulp mill, sodium sulphate now shipped from Saskatchewan to eastern Canada could be used in the manufacture of paper in that province.

While the Saskatchewan government has been going ahead and developing certain industries, particularly the lumber industry, in the northern section of the province, there is no definite indication that the government itself is interested in establishing its own pulp mill in Saskatchewan. Several private concerns are known to have contacted the government with a view to establishing such a plant.

According to government spokesmen, there is sufficient poplar and spruce in the northern part of Saskatchewan to maintain operation for a large-sized mill.

Consolidated Gets Permits For Three New Buildings

WISCONSIN RAPIDS, Wis. — Consolidated Water Power and Paper Company has obtained city building permits to construct a two-story machine shop, a two-story box factory, and a quonset-type storage building.

The machine shop will be of brick and structural steel. It will be 112 by 159 feet and will contain 604,000 cubic feet of space. It will house lathes, planers and other machine shop equipment, and will provide space for roll storage and contain offices for foremen and the Bull's Eye Credit Union, composed of Consolidated employes.

The new box factory, which also will be of brick and structural steel, will be 64 by 112 feet. It will contain 215,040 cubic feet of space.

The quonset storage building will be 80 by 300 feet. It will be completed in about a month. The box factory is expected to be completed in two months, and the machine shop in four months.

Hinde & Dauch Gets Bids

CHATHAM, Ont.—Hinde and Dauch Paper Company is now receiving tenders for the erection of a new plant at this center. The new unit will be of one-story brick construction and will cover approximately 100,000 square feet and will cost about $1,000,000. The plant is expected to be in operation in about a year's time and will employ about 150 workers.

FRANK L. MARKLE

Sales Service Manager of United Paperboard Company, Inc., Folding Carton Division. He will be stationed at United's New York Office. Before joining United, Mr. Markle was associated for five years with the Sutherland Paper Company, and for eleven years with Eddy Paper Corporation. Mr. Markle brings to United a wide experience in the fields of corrugated and solid fibre, specialties, folding cartons, and laminated and plain paperboard.

Pacific Mills Scans Nascall Basin Site

VANCOUVER, B. C. — Further examination of the Nascall Basin, 27 miles northeast of Ocean Falls, British Columbia, as a potential site for a major hydro-electric power development was recently undertaken for Pacific Mills Ltd.

The first inspection of this area was made on behalf of Pacific Mills by B. E. Condit, consulting engineer, in 1926, and a further survey was made by D. W. Hodson in 1930. Aerial surveys of the watershed and the shores of Dean Channel were made in 1937 and 1938, by the photographic division of Canadian Airways.

In 1943 Pacific Mills again gave consideration to this potential power development and in 1945 H. G. Acres and Company, Niagara Falls hydro-electric consulting engineers, were engaged to make an initial survey of horsepower development. Their report indicated possibilities which justified additional expense for a more detailed survey and in 1946 Pacific Mills spent approximately $80,000 on a comprehensive survey of dam and power house sites and transmission line right-of-ways.

During this survey, two camps were set up, one on the north shore of Nascall Bay, housing about 30 men, and a smaller camp at Cascade Inlet, 14 miles west.

A number of temporary roads were constructed and temporary bridges built for the purpose of facilitating operations and moving the 1500-pound diamond drill rig.

The dam and power house survey for the H. G. Acres & Co. was directed by Jasper Ings, field supervisor, and K. C. Fellows, resident engineer, with W. G. Heslop, professor of civil engineering, University of British Columbia, and former transmission line executive with the Ontario Hydro Commission, handled the transmission line survey.

More than 2000 feet of test holes were diamond-drilled during this survey in 18 different locations by the T. Connor Diamond Drilling Company for the purpose of obtaining data for dam abutments, tunnel rock and power house foundations.

The results of the various surveys were assembled into a final report by H. G. Acres & Co. and have recently been presented to Pacific Mills Ltd.

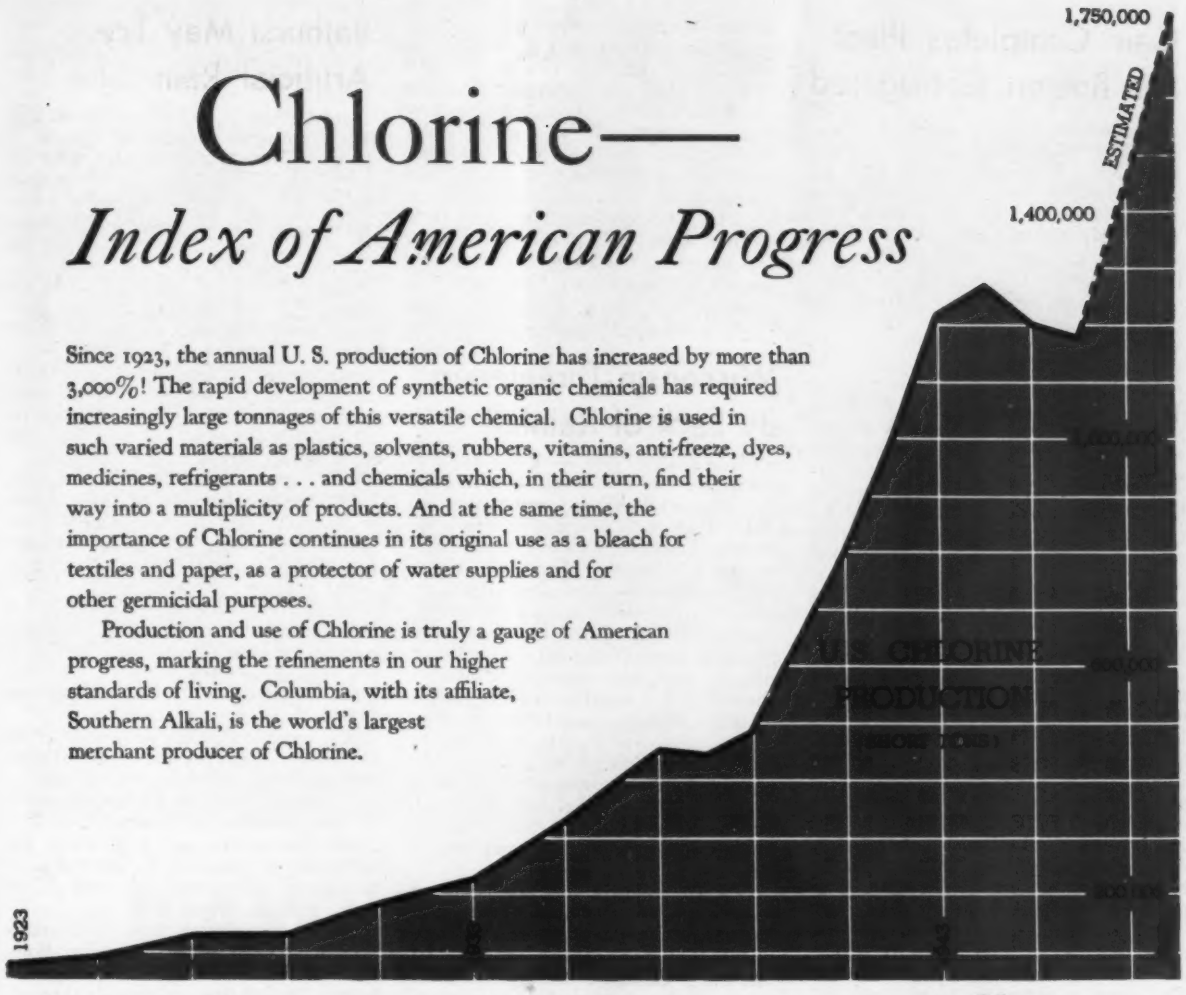
No decision has yet been made as to whether or not work will be undertaken on this project.

Lake St. John Starts Building

BOLBEAU, Que. — Lake St. John Power and Paper Company is beginning preliminary work for a new warehouse and office building, the cost of which will run in the neighborhood of $200,000.

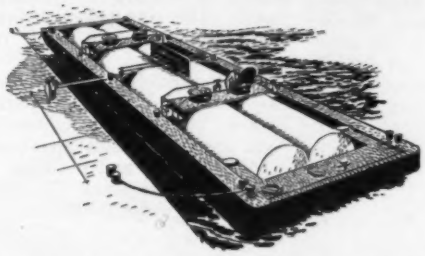
Chlorine—

Index of American Progress

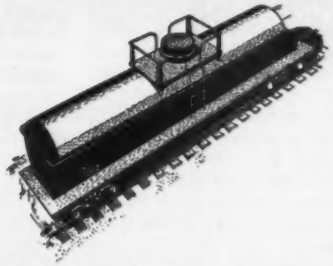


Since 1923, the annual U. S. production of Chlorine has increased by more than 3,000%! The rapid development of synthetic organic chemicals has required increasingly large tonnages of this versatile chemical. Chlorine is used in such varied materials as plastics, solvents, rubbers, vitamins, anti-freeze, dyes, medicines, refrigerants . . . and chemicals which, in their turn, find their way into a multiplicity of products. And at the same time, the importance of Chlorine continues in its original use as a bleach for textiles and paper, as a protector of water supplies and for other germicidal purposes.

Production and use of Chlorine is truly a gauge of American progress, marking the refinements in our higher standards of living. Columbia, with its affiliate, Southern Alkali, is the world's largest merchant producer of Chlorine.



NEW COLUMBIA BARGES offer numerous advantages to large-volume chlorine consumers located along the Ohio-Mississippi waterways. Each barge has a capacity of 600 tons and has many features for safety and simplicity in loading and delivery.



55-TON CHLORINE TANK CARS were first placed in service through Columbia assistance in design. Complete transportation service includes 30-ton single unit tank cars . . . multiple 15 one-ton unit cars and 100 and 150 lb. all-steel cylinders.

PITTSBURGH PLATE GLASS COMPANY, COLUMBIA CHEMICAL DIVISION, FIFTH AVENUE AT BELLEFIELD, PITTSBURGH 13, PA.

Manufacturers of Alkalies and related products, including SODA ASH, CAUSTIC SODA, LIQUID CHLORINE, SODIUM BICARBONATE, CALCIUM CHLORIDE, CAUSTIC ASH, MODIFIED SODAS SODA BRIQUETTES, PHOSFLAKE, CALCENE T, SILENE EF, PITTCHLOR AND PITTCIDE.

COLUMBIA CHEMICALS

PAINT • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Gair Completes Plant For Boston Corrugated

CAMBRIDGE, Mass.—George E. Dyke, president of Robert Gair Company, Inc., New York, this week reported the completion of a million-dollar plant for the Boston Corrugated Box Division at 170 Fawcett Street, Cambridge.

This new plant is the sixth occupied by the Boston Corrugated Box Division since the inception of its predecessor company 40 years ago, each move having been forced by the need for larger manufacturing space. The Cambridge factory is of steel frame and brick masonry construction, of one story, except the front, which is two stories high to house the shipping floor and the office. The main manufacturing room is 180 feet by 500 feet, the largest single manufacturing floor in Gair's plants, and the total manufacturing area is approximately 150,000 square feet.

This plant was designed and erected under the supervision of John E. A. Warner, chief engineer of the Robert Gair Company, Inc., and his staff. The general contract for erection was placed with Thomas O'Connor Co., Inc., Cambridge. The foundations were designed by the office of Maurice A. Reidy, construction engineer, Boston, and the steel frame, roof deck and window sash were supplied through the Boston office of Truscon Steel Co. Among the interesting features of the building are the natural lighting by a pair of monitors running the full length of the huge manufacturing floor, and the arrangements by which all receiving and shipping is enclosed. The plant is served by a spur of the Boston & Maine Railroad.

The equipment of the former plant has been installed in the new plant, and additional improvements made to provide a modern box shop designed for economical manufacture and increased capacity. The plant is under the local direction of Gordon W. Olson, division manager; Frank E. Newton, sales manager; and Hubert D. Sewell, superintendent.

The building of this Cambridge plant was part of a program of Robert Gair Company, Inc., which included the recent installation of a million dollar Fourdrinier machine at its Thames River Division for the production of corrugating material, a seventeen million dollar forestry and mill project in Georgia — to be completed early in 1948 — for the production of kraft pulp and liner for all Gair corrugated box plants, and other expansion plans at various Gair divisions.

The Boston Corrugated Box Division is one of the oldest units in the shipping container industry in New England, having been established in 1907 at Cambridge by A. F. Warner who was soon joined by Mr. Childs and the business incorporated under the name of Warner & Childs Co. Mr. Childs remained active for a short period only. The steady growth of the business forced Mr. Warner in 1908 to move from his Cambridge quarters to Medford, Massachusetts, where later he built a three-story concrete building. The business was purchased by R. M. Taylor in 1923. The Gair Company in turn bought the business in 1928 and continued at the same location until 1935 when the business was moved to the Saco-Lowell properties in Newton Upper Falls, where it remained until the present move.

Wisconsin Threatened By Lack of Rainfall

MILWAUKEE, Wis.—A shortage of electricity has developed, the Wisconsin Public Service Corporation declared last week, in an appeal to home owners, business places and industries to use less power. Lack of rainfall and consequent depletion of water power has become a major factor, according to C. E. Kohlhepp, vice-president and general manager. Other factors, he said, are increased consumer demand and a shortage of generating capacity. He expressed belief that conservation measures are likely to be necessary throughout the winter. The company operates in many Wisconsin communities, including such paper mill cities as Rhinelander, Merrill, Wausau, Stevens Point, Green Bay and Marinette.

Kohlhepp said the firm was short of generating capacity because of wartime restrictions on construction.

"Now, on top of the shortage of generating capacity, the hydroelectric plants which are dependent upon rainfall have had their production greatly reduced by an extremely dry fall only equalled in the drought year of 1933," he said. Referring to the corporation's building program, Kohlhepp said that the demand for power had risen 60 percent since 1941. The concern will spend a total of $24,000,000 during the next five years.

United Paperboard Plans Recreation Center

SCHUYLERVILLE, N. Y.—Plans for reopening the Casino here as a recreational center were discussed at the Old Saratoga Club this week, the principal speaker being U. C. Shropshire, of the laminating division of the United Paperboard Company, owners of the building. The company plans to provide entertainment features which will include gymnasium, ping pong, basketball and other sports. While the use of the building is mainly for employes of the mill, Mr. Shropshire stated that others would eventually be permitted to make use of its facilities and invited the old Saratoga Club to be sponsors by donations for equipment for the younger element.

Bathurst May Try Artificial Rain

BATHURST, N. B.—Cloud banks over the Nepisiguit watershed are to be bombed from high altitudes with dry ice crystals in an effort to bring about heavy rainfall and increase the power supply of the big mill of Bathurst Power & Paper Company Ltd., it was learned recently.

Chief source of employment in this town, the mill is operating on part-time because of an acute power shortage. The situation arose from a breakdown in the steam-power generating unit combined with an exceptionally low level of the Nepisiguit River where the company has a hydro plant at Bathurst Mines.

J. Gordon Chalmers, mill manager, said it might be two or three weeks or more before the unit could be restored to service. A Montreal expert has been flown to Bathurst to try to speed repairs.

Meanwhile, with the river at such a low point, only a minimum of power can be obtained from that source. If the "bombing" creates man-made rain, it will step up the power output and greatly ease the situation.

The experiment has been planned by G. C. Merserau, president of Bathurst Air Services, Limited, which holds a government contract for aerial patrol of New Brunswick forests.

Mr. Mersereau said a previous but undeveloped idea was to determine if man-made rain could be used as an agent against forest fire.

Under ideal conditions, demonstrations have shown that drenching showers can be created by dropping 100 pounds of fine dry ice crystals through clouds. The tiny pellets crystalize the cloud moisture and bring it to the ground as rain.

Since discovery of this last year it has been tried in many parts of the United States. The clouds must be right and the crystals dropped from a precise altitude and position.

The ice costs about $12 for the 100 pounds needed to create a heavy shower.

Powell River Increases Its Plant Capacity

POWELL RIVER, B. C.—Plant capacity of the Powell River Company, Limited, was recently increased by installation of a new 18,000 KVA hydraulic turbine and generator at the Lois River, 13 miles south of Powell River in a large stillwater power house.

The new generator will permit increased power necessary for the expansion program in which the company has been engaged for the past seven years, and which will continue for a considerable time.

Erection of a new concrete dam to confine the waters of the Gordon Pasha water shed is also nearing completion at Powell River.

DIAMOND *Liquid* CHLORINE

Shipped to you in tank cars,

multi-unit cars, or in

cylinders, to best suit

your requirements

DIAMOND ALKALI COMPANY

FINANCE

St. Lawrence Nears New Set-Up Plan

MONTREAL—Plans for a capital reorganization of St. Lawrence Corporation and its subsidiaries have reached to the stage where it is hoped a formal announcement can be made shortly.

Various plans which have been under review have now been largely sifted down to one, it is stated. Management is now at work on the details of what it believes will be a concrete proposal for capital overhaul.

While the terms of plans have not yet been disclosed, it is reliably reported that the arrears on the St. Lawrence Corporation A preferred and the St. Lawrence Paper Mills preferred may be covered by the issue of two new classes of preferred stock.

In the case of St. Lawrence Paper Mills, such a plan would possibly call for issue of 124,875 new 6 percent cumulative first preferred shares par $100. In addition there would be 124,875 shares of second preferred with a call price of $65 to cover arrears of $64.75. It is likely that the second preferred would be retired out of sinking fund payment over a 10- or 15-year period.

Investment men point out that preferred shareholders of St. Lawrence Paper Mills at present have a theoretical bargaining power of $164.75 represented by $100 of capital (par value) and $64.75 on arrears. At present the market valuation of this stock is approximately $140 a share. Thus, to be attractive to shareholders, any proposal would have to offer new securities with a minimum of $140 but more likely a figure midway between, say $150.

On the basis of the plan outlined above, the preferred shareholder would get a senior security which would sell at its call price, and second preferred would have to have a market value of $40 or $45 a share depending on the call price of the first preferred. This would suggest a dividend rate on the second preferred of approximately $2 a share, it is felt.

If such a plan should go through the St. Lawrence Paper Mills Preferred Shareholders' Protective Committee, the existing shareholder would get new security worth approximately $150 a share on the open market plus $8 a year in dividend from the two classes of preferred stock.

AWP Pays on Common After 40 Years

HOLYOKE, Mass.—American Writing Paper Corporation directors have declared a 25-cent-a-share dividend on the common stock, payable December 20 to stockholders on record of December 5.

This is the first common stock dividend paid by AWP in some 40 years. For a brief period after the company was organized at the turn of the century, dividends were paid. Then came the reorganizations. The last such reorganization was effected in 1937, when the present management took over. Since then, the AWP has retired its outstanding bond issue and now is in a position to begin common stock payment.

International Pays $1 Extra on Common

NEW YORK—An additional year-end dividend of $1 a share on the common stock was declared at the director's meeting of International Paper Company late last week. At the same time the board declared the regular quarterly dividends of 75 cents a share on the common stock and $1 a share on the cumulative $4 preferred stock.

The board also authorized prepayment of the remaining $5 million of the company's unsecured 2 percent notes. This will leave International and its subsidiaries entirely free of interest bearing debt for the first time since the company was organized in 1898. After this payment the capital structure of the company will consist solely of $23 million of $4 preferred stock and 3,560,000 share of common.

Net profit for the third quarter of 1947 includes as an extraordinary item of income the sum of $2,662,023 representing the final adjustment of income and excess profits taxes of Canadian subsidiaries for 1940-45.

In continuance of the policy adopted in the second quarter an additional amount of $4,500,000 was appropriated in the third quarter for inventory price adjustment which, with further appropriations to be made for the balance of the year, will provide reserves to reduce inventory unit prices approximately to those existing December 31, 1936.

Wallpaper Profits Dip

CHICAGO—Net sales of United Wallpaper, Inc., and domestic subsidiaries for the three months ended September 30, 1947, were $3,776,493. Net profits after taxes were $150,139, compared with $478,211.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending November 15, 1947

STOCKS

	High	Low	Last
A. P. W.	5⅛	5	5
Armstrong Cork Co.	49½	48⅛	48⅜
Armstrong Cork Co., pf.	99⅛	98½	98½
Celotex Corp.	27⅜	26⅝	27⅜
Celotex Corp., pf.	20½	20⅛	20⅛
Certain-Teed Products Corp.	18⅛	17⅝	17¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	23⅝	22¾	23
Champion Paper & Fibre Co., pf.	105⅝	105⅜	105⅜
Congoleum Nairn Co.	32¾	30½	32¼
Container Corp. of America	42	40½	40½
Container Corp. of America, pf.	....	....	....
Crown Zellerbach Co.	33⅜	32⅜	33
Crown Zellerbach Co., pf. 4.20	102½	102¼	102½
Crown Zellerbach Co., 4 pf. 4	123	123	123
Dixie Cup Co.	38	36	38
Dixie Cup Co., A	55	54½	54½
Flintkote Co.	36⅞	36	36½
Flintkote Co., pf.	102½	101	102½
Robert Gair	9¾	9½	9⅝
Robert Gair, pf.	19¾	19¾	19¾
International Paper Co.	57⅞	55½	57⅝
International Paper Co., pf.	99½	99½	99½
Johns-Manville Corp.	43⅞	42½	42½
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	24¼	23¾	24¼
Kimberly-Clark Corp., pf.	108¾	107¾	107¾
Mac Andrews & Forbes	38½	38½	38½
Mac Andrews & Forbes, pf.	135	135	135
Marathon Corp.	21½	20¾	20⅞
Mead Corp.	22	21⅝	22
Mead Corp., pf. 4¼	93½	93¼	93¼
Mead Corp., pf. 2	46¾	45½	46¾
National Container Corp.	14¾	14¼	14⅜
Paraffine Companies, Inc.	72	70	72
Paraffine Companies, Inc., pf.	105	105	105
Rayonier, Inc.	30½	29	30
Rayonier, Inc., pf.	36⅜	36⅛	36¼
Ruberoid Co.	64¾	62	64¾
St. Regis Paper Co.	10½	10	10⅜
St. Regis Paper Co., pf.	92½	91	91
Scott Paper Co.	46	45½	45½
Scott Paper Co., pf.	97¼	97¼	97¼
Sutherland Paper Co.	42	42	42
Union Bag & Paper Corp.	33¼	32	33¼
United Paperboard Co.	17	16	17
United Wallpaper	6⅜	5⅞	6
U. S. Gypsum Co.	105½	104¾	105¼
U. S. Gypsum Co., pf.	180	178	178
West Virginia Pulp & Paper Co.	43¾	43	43½
West Virginia Pulp & Paper Co., pf.	107¾	107¾	107¾

BONDS

Celotex Corp., 3¼s '60	....	....	....
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '68	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending November 15, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	45¼	45	45
Taggart Corp.	10¼	10¼	10¼

BONDS

American Writing Paper Co., 6s '61	....	....	....

We're not resting on our laurels... or on anything else, thank you!

The engineers at Moore & White would be definitely depressed if they felt that they had shot their bolts on the newly designed Cutters, Winders, Re-winders, and Lay Boys which are now available to you.

Naturally, we think that these and our other paper-making machines have the edge in advanced design as well as in dependable precision construction. Our growing family of customers seems to feel the same way about it.

But resting on our laurels has no place in Moore & White policy. The drafting room is always lengths ahead of the shop . . . a healthy condition, you will find, when it sharpens its pencils to custom-design *your* paper-making machinery.

The MOORE & WHITE Company • 15TH STREET AND LEHIGH AVENUE, PHILADELPHIA 32, PA.

CUSTOM-BUILT MACHINES FOR PAPER MAKERS

Brotherhood Lets Building Contract

ALBANY, N. Y.—The International Papermakers Realty Corp. plans to proceed with construction of a new building on North Pearl Street at a cost of approximately $100,000. All stock in the corporation is owned by the International Brotherhood of Papermakers which has maintained its principal headquarters in this city since 1911. The organization now occupies the Argus Building.

The new structure will be a one-story, modern fireproof building, covering 11,000 square feet, and contract has been awarded to the J. J. Smith Contracting Company, of this city. Plans for the new structure were drawn by H. O. Fullerton, architect, and the plot of land was acquired by the Wilso Sullivan Company.

The new headquarters of the organization will have a staff of about fifty persons, including officers and executives, and it is predicted that it will be ready for occupancy by spring of next year. The new structure will house the executive offices, secretary and treasury departments, legal departments and the Papermakers' Journal. It was stated that the structure will be the first in this city to have Corning fibre glass; acoustical ceilings and natural daylight on four sides. Heating apparatus is to be installed throughout.

Only recently the organization purchased the Stratton Building, this city, at a cost of $300,000 for investment purposes for the international headquarters and the death benefit fund. The structure is now occupied by various state departments. The building is to be held for possible sale at a later time.

The organization now boasts of a membership of 56,000 persons in this country, six provinces of Canada and Newfoundland.

National Container Profits Up for First Nine Months

NEW YORK—Consolidated net profits of National Container Corporation and its subsidiaries for the nine months ended September 30, 1947, totaled $8,288,615.32 which after provision for preferred dividends amounted to $3.17 per share on 2,613,976 common shares outstanding as at September 30, 1947. Consolidated net profit for the nine months ended September 30, 1946, totaled $3,330,140.20 which after provision for preferred dividends amounted to $1.36 per share on 2,403,009 common shares standing as at September 30, 1946.

Consolidated net profit for the third quarter of 1947 amounted to $2,291,231.64 or eighty-seven cents per common share compared with $1,590,070.80 or sixty-four cents per common share for the third quarter of 1946, adjusted as above.

CHARLES H. PLOGMAN

Sales Representative in charge of the Cincinnati area for the United Paperboard Company, Inc. Before joining United, he served for about eight years as purchasing agent of paper and packaging materials for the Kroger Grocery and Baking Company. Subsequent to that, he was in business for himself as a broker of miscellaneous packaging materials,

Thilmany Foremen Hold Safety Dinner

KAUKAUNA, Wis. — Foremen of the Thilmany Pulp and Paper Company heard Voyta Wrabetz, Madison, chairman of the Wisconsin Industrial Commission, at a dinner and meeting Monday evening, November 17, at the Elks club. The company gave the dinner in recognition of the improved safety record of the Thilmany plant during the national safety contest from July 1, 1946, through June of this year.

All three divisions of the Thilmany plant — the upper mill, the lower mill and the bag mill — had approximately one-half the accident rate of the previous year, according to L. C. Smith, personnel director.

In the contest, sponsored by the National Safety Council, the upper mill stood eighth in the nation among 48 Group B paper and pulp mills, with an average of 5.06 man hours lost because of accidents per million man-hours of exposure. The lower mill stood sixteenth in Group B with a rate of 10.38. The national average for mills in this category was 16.56 man-hours lost per million exposure.

The bag mill was seventh among 31 mills in Group B of paper and board manufacturing mills. All mills in the contest were grouped into Class A or B, based on the number of million man-hours of exposure, with Class A in the larger classification.

Also on the program November 17 was a skit by employes of Kimberly-Clark Corporation. Music was furnished by the Thilco Tunesters.

Seek Flood Control On Fox and Wolf

OSHKOSH, Wis. — Control of floods of the Fox river and its principal tributary, the Wolf, was discussed here November 12 at a meeting in the city hall. Among those present were Colonel J. O. Colonna of the Milwaukee office of the War Department engineers, who presided; U. S. Representative Reid Murray, Ogdensburg, of the Sixth Wisconsin district; and M. W. Torkelson, Madison, secretary of the state planning commission. About 100 persons were present.

Power, land preservation and conservation were stressed at the meeting as among the greatest beneficial effects of flood control. Among the measures suggested were dams, reservoirs, and the straightening of rivers in various places.

Congressman Murray said that control of the river would contribute to the welfare of the various communities, and that the cost would be justified.

"It would not be out of line for the federal government to expend a few pennies in this part of Wisconsin in view of the appropriations elsewhere," he said. He explained that money for such projects has been set aside by Congress, but none appropriated directly to any projects in this section.

"There is no place in the United States where flood control is better justified than in the Fox river valley," Torkelson told the group. He said the state planning board has made surveys and findings show that floods are common on the Wolf river. "We here in Wisconsin have been a conservative, thrifty crowd," he said. "Consequently, we never had our tin cups out to Washington and as a result never received much aid."

T. E. Orbison, Appleton, a representative of water power interests, said that flood control measures would benefit those interests, but asserted that building dams just for those interests would involve too steep a price. However, he said, with benefits accruing to wild life, recreation and agriculture, he believed the project feasible.

Union Bag Votes Extra

NEW YORK—Directors of Union Bag & Paper Corporation this week declared a regular quarterly dividend of 50 cents per share and an extra dividend of 25 cents per share on the capital stock of the company, payable December 9 to stockholders of record at the close of business December 1.

Marshall Succeeds Davies

VANCOUVER, B. C.—W. M. Marshall has succeeded Ken Davies as general manager of the Coast Paper Limited, 835 Cambie Street.

Avoid costly replacements by using

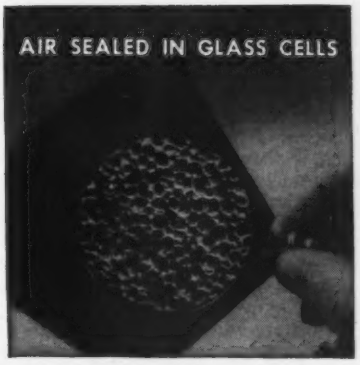
PC FOAMGLAS INSULATION

When installed according to our specifications, for recommended applications, PC Foamglas retains its original insulating efficiency *permanently.*

On roofs and ceilings, in walls and floors, in a wide variety of buildings, PC Foamglas insulation helps to maintain temperature levels, to minimize condensation, to withstand humidity. Being glass, PC Foamglas is impervious to many elements — such as acid atmospheres, vapors and fumes—that cause other materials to lose insulating efficiency to the point where they must be replaced.

Your plant, like all others, presents an individual insulating problem. We shall be glad to consult with you upon request, to determine how and where PC Foamglas can help maintain desired conditions. You incur no obligation.

We shall be glad to send you our booklets, which give full information on the installation of PC Foamglas for ordinary service. Just mail the convenient coupon. Pittsburgh Corning Corporation also makes PC Glass Blocks.



When you insulate with FOAMGLAS you insulate for good.

PITTSBURGH PC CORNING ® **FOAMGLAS INSULATION**

FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS

Pittsburgh Corning Corporation
Room 496, 632 Duquesne Way
Pittsburgh 22, Pa.

Please send me without obligation, your free booklets on the use of PC Foamglas insulation for:

Roofs_____ Walls_____ Floors_____

Name_____

Address_____

City_____ State_____

Gummed Industries Elects Frank O'Neill

CLEVELAND—Principal executives of gummed paper products manufacturers, located from the Atlantic to the Pacific Coasts, met in annual convention at Cleveland last week, November 12th and 13th, at what turned out to be the largest meeting, from an attendance standpoint, the Gummed Industries Association, Inc., has ever held in its past twenty-six years of history. They elected Frank A. O'Neill, Jr. of Paper Manufacturers Company, Philadelphia, as president for the 1947-48 term, and Arno L. Zinke of the Mid-States Gummed Paper Company, Chicago, as vice-president. Philip O. Deitsch was again named as the managing director of the Association.

Two additions to the Board were named in the persons of Russ Y. Cutler of The Tanglefoot Company of Grand Rapids, Mich., and Orville R. Johnson of the Western Waxed Paper Company Division of Crown-Zellerbach Corporation of North Portland, Ore.

The outgoing President, J. A. Shartle of The Brown-Bridge Mills, Inc., emphasized, in his annual report to the industry, in the delivery of the shortest Presidential Address in the history of the Association, that he would defer his report to the remarks of the managing director in that the detail embraced in that discussion warranted the most serious consideration of every producing unit directly or indirectly interested in the Gumming Division of the Paper Industry.

In his annual report, Phil Deitsch stressed the need for aggressive and militant cooperation on the part of all members of the Industry with the work of the Association. Such action, he said, was necessary in the interest of overcoming the threat most divisions of Industry now face in connection with substitutes.

"The militant industry, the one concerned with its future, the one who believes that future is worth protecting, is the industry who will turn its attention to programs of cooperation never before undertaken for the common good of all and the public they serve—no industry remains static, they either go forward or backward, and in large measure, they write their own ticket in that respect."

He stressed the economic position of the Gumming Industry and briefly retraced the history of the Association during the past ten years of his administration.

One of the highlights of his report was the announcement that the Sealing Tape Division of the Association was, at long last, "come of age" and is about to embark upon an essential educational and advertising effort designed to educate not only members of the Industry into a greater fulfillment of their responsibilities to their customers, but as well to educate the merchant, the shipper and all divisions of the carriers into the underlying principles of the proper application and use of sealing tape as a closure.

Plans of the campaign, among other things, tentatively call for the employment of field men, trade, business and shipping publications and the tie in of individual company advertising with that of the over-all Assocation campaign.

In another part of his report, Deitsch announced that financial support of the Industry's work was now forthcoming, either directly or indirectly, from 99 per cent of all producing units engaged in the manufacture of gumming items in continental United States, "there being only one company in the entire Industry who are not now carrying their fair share of the financial burden."

Significant in this phase of the report was the fact that the Association operates wholly and entirely along democratic lines of administration, and engages, under the careful guidance of able Counsel, in the person of A. E. Sawyer, in only such activities as are well within the letter, meaning and spirit of regulations and statutes governing Trade Association procedure.

Roth F. Herrlinger, retiring chairman of the Educational and Advertising Committee, stated that he was now ready to hand his responsibilities as chairman over to some other member of the Industry in that the purposes for which he was appointed some four years ago "had been fully accomplished and our Educational and Advertising Campaign now becomes a reality."

Continuing, he said, "I now feel that someone else should assume the burden of working with our Director in the successful execution of this campaign, and stand ready, in the future as I always have in the past, to render to the personnel of that Committee and to our Director, such assistance and advice of which I am capable so long as that assistance and advice is geared to the common welfare of our Industry, the Merchant, the Carrier and the Public we serve."

In assuming his new duties as President of the Association, Frank O'Neill of Paper Manufacturers Company spoke in part as follows:—"I am delighted at this honor, and feel that with the capable cooperation of our Association, which I know will be forthcoming, I look forward to a banner year for our Industry in the months that lie ahead."

The new Board of Directors, in addition to the Officers mentioned earlier, are as follows: Russ Y. Cutler, The Tanglefoot Company, Grand Rapids, Mich.; Roth F. Herrlinger, The Gummed Products Company, Troy, Ohio; Orville R. Johnson, Western Waxed Paper Company, North Portland, Ore.; E. B. Luck, Wortendyke Manufacturing Company, Richmond, Va.; John MacLaurin, McLaurin-Jones Company, Brookfield, Mass.; R. A. Maish, Dennison Manufacturing Company, Framingham, Mass.; J. A. Shartle, Brown-Bridge Mills, Inc., Troy, Ohio.

Survey Highlight of Waxed Paper Meeting

CHICAGO—Results of a nation-wide survey on "bread-wrap preferences of American housewives" were the highlight of the fall meeting of the Waxed Paper Institute in Chicago, October 31. Findings were presented by W. F. O'Dell, president of Market Facts, Inc., whose company conducted the survey.

Other phases of the Institute's merchandising program were presented by Harold L. Bills, Saniwax Paper Company, Kalamazoo, Mich.; John H. Snyder, Marathon Corporation, Menasha, Wis.; Glenn Stewart, Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.; and Howard H. Monk, Howard H. Monk and Associates, Rockford, Ill. Fred Callicotte of Waxide Paper Company, Kansas City, Mo., discussed methods and ideas for industry-wide use of the "Waxed Paper Protects Freshness" slogan on bread wraps, letterheads, packages, local and national advertising, literature, etc.

Karl R. Zimmer, president of Zimmer Paper Products, Inc., Indianapolis, presided at the meeting. Reports were given by E. P. Gerhardt, Central Waxed Paper Co., Chicago, chairman of the traffic committee; W. P. Patterson, The Specialty Papers Company, Dayton, chairman of the Statistical committee; and T. A. Sullivan, H. P. Smith Paper Company, Chicago, chairman of the Industrial Relations committee.

A. H. Noelke and Paul Pannier of the Waxed Paper Institute spoke on "Ink Scanning Devices;" and the "Wax Situation for 1948" was discussed by W. V. Brumbaugh of the Institute's office.

Morris Designs Samples For Greeting Trade

NEW YORK—Greeting card publishers and designers received this week Aldine Paper Company's new Paper Sampler, a large metal cabinet complete with work sheets of the entire line of Aldine papers developed exclusively for the production of modern greeting cards. Harry E. Gould, president, credited C. V. Morris, vice-president, with creation and development of the Sampler.

Dyke Again Heads Paperboard Group

NEW YORK—George E. Dyke, President of Robert Gair Company, Inc., was reelected president of the National Paperboard Association at its meeting here last week. Others, also reelected, were W. H. Beckwith, vice-president of the Morris Paper Mills, Morris, Ill., vice-president; F. H. Becker, executive manager, and H. S. Adler, secretary-treasurer.

This MIRROR FINISH

reflects Smooth Cutting
... throughout the Long Life of a

SIMONDS

PAPER KNIFE

Look at the mirror-like finish of a Simonds "Red Streak" Knife, and you can *see* what super-smooth cutting it will give you! Only Simonds' own S-301 Knives have this finish. And only Simonds' Knives ... made from specially developed steel ... will give you *10% to 15% more cutting between grinds* than you ever got before.

Simonds "Red Streak" S-301 Paper Knives come to you in perfect condition, protectively packed so that the edge actually *floats in air,* as you can see, above. Order from your dealer today.

SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.
Other Divisions of SIMONDS SAW AND STEEL CO. making Quality Products for Industry

SIMONDS STEEL MILLS — LOCKPORT, N.Y. — *Special Electric Furnace Steels*

SIMONDS ABRASIVE CO. — PHILADELPHIA, PA. — *Grinding Wheels and Grains*

SIMONDS CANADA SAW CO. LTD. — MONTREAL, TORONTO, VANCOUVER, SAINT JOHN, N.B. — *Simonds Products for Canada*

BRANCH OFFICES: 1330 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portand 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. *Canadian Factory:* 595 St. Remi St., Montreal 30, Que.

Newsprint Use Runs 16 Per Cent Ahead

NEW YORK — Daily newspapers reporting to the American Newspaper Publishers Association had 36 days' supply of newsprint on hand and in transit at the end of October, 1947. This represents a decrease of three days' supply compared with stocks on hand at the end of September. These stocks for 36 days at the end of October 1947 compare with 32 days at the end of October 1946; 40 days at the end of October 1945; and 45 days at the end of October 1941.

Many publishers, especially those dependent on water borne shipments from ports which are ice bound during the winter months, build up their stocks of newsprint on hand during the summer and fall to carry them through the winter.

Daily newspapers reporting to the ANPA consumed 339,286 tons of newsprint in October 1947 compared with 292,205 tons in October 1946 and 262,488 tons in October 1941. This was an increase in October 1947 over October 1946 of 16.1 percent and an increase over October 1941 of 29.3 percent.

The total estimated newsprint consumption in the United States for October 1947 was 464,775 tons which includes all kinds of uses of newsprint. For the first ten months of 1947 it is estimated to be 3,978,808 tons. During the first ten months of 1947 the reporting newspapers used 2,904,530 tons of newsprint, an increase of 13.9 percent over the first ten months of 1946 and an increase of 20.6 percent over the first ten months of 1941.

Residents Vote to Set Up New Village at Whiting

STEVENS POINT, Wis. — A new village—Whiting—is being created south of this city, principally in the town of Plover, as the result of a 248 to 44 vote in a special referendum on November 8. It had been estimated before the election that about 300 persons were eligible to cast ballots, so the total vote represents a high percentage. One vote was declared defective and was not counted.

A special election is planned to choose officers for the new village as the next step in organization. Large paper mill holdings are included in Whiting, which will include about one and one-half square miles. In it are the properties of the Stevens Point Pulp and Paper Company, the Wisconsin River division of Consolidated Water Power and Paper Company, and the Whiting-Plover Paper Company.

Paraguay Limits Papers Under Foreign Exchange

WASHINGTON — A wide variety of paper products and special purpose papers have been included under "nonessentials" for which foreign exchange will be temporarily withheld, it is indicated in a recent report from Paraguay.

The classification reported for these products was "Nonessential commodities, Not Immediately Required." Purpose of the grouping of imports, it is explained, is to determine products for which foreign exchange will be allocated by the Government.

Included under the designation, as reported by consular advices to this country, are carbon, cigarette, tissue, oiled, typing and mimeograph, filter and roofing papers, paper napkins, blank cards, blank books, drinking cups, cardboard in sheets, cardboard boxes and containers, wall-papers, paper tape, embossed and other writing papers, stationery and postcards.

British Editor Tells Of Newsprint Lack

WINNIPEG, Man.—Shortage of newsprint in England, how it affected newspaper production, was discussed by Hon. David Astor, foreign editor of the London Observer, on his recent visit here.

Mr. Astor, accompanied by his wife, is making his first tour of Canada. The purpose of the visit is both journalistic and educational. As foreign editor for the newspaper he is concerned with making business contacts with Canadian editors and publishers in the interests of marketing foreign news.

Commenting on the size of the London Observer, which is published every Sunday, Mr. Astor stated that due to the newsprint shortage the paper consists of eight and six pages on alternate weeks. "This condition certainly makes for very tight writing," he said.

The paper shortage has also made it impossible to sell advertising on a large scale, Mr. Astor pointed out. "Those who do advertise in the newspaper have to pay a high rate for a comparatively small advertisement," he added.

The London Observer, said Mr. Astor, is a general newspaper specializing in foreign news with additional articles on literature and music. The circulation is approximately 400,000, he said.

Of the prominent writers employed by the Observer, Mr. Astor mentioned Denis Brogan, professor of political science at Cambridge University. Alan Moorehead, an Australian, served as war correspondent in Africa and Europe for the Observer throughout the entire war, Mr. Astor said.

Women, too, have a place on the staff of the London Observer, according to Mr. Astor. He stated that the paper employs a woman correspondent in New York and Paris. Miss Honor Tracy, a young Irish journalist, recently was sent to Poland, Czechoslovakia, Hungary and Austria to do a series of articles for the paper, Mr. Astor said.

Newsprint Production Continues Advance

NEW YORK — Production of newsprint in Canada during October 1947 amounted to 396,251 tons and shipments to 389,505 tons, according to the News Print Service Bureau. Production in the United States was 72,253 tons and shipments were 73,545 tons. The output in Newfoundland was 34,370 tons and shipments were 38,061 tons making a total North American production of 502,874 tons and shipments of 501,111 tons, compared with continental production of 476,265 tons and shipments of 477,266 tons in October 1946. North American production in October 1947 was greater than in any previous month on record.

The Canadian mills produced 276,244 tons more in the first ten months of 1947 than in the first ten months of 1946, which was an increase of 8.0 percent. The output in the United States was 49,136 tons or 7.6 percent more than in the first ten months of 1946; in Newfoundland production was 8,585 tons or 2.8 percent more, making a total increase of 333,965 tons, or 7.6 percent more than in the first ten months of 1946, and also was higher than in any preceding similar period.

Stocks of news print paper at the end of October were 74,310 tons at Canadian mills, 11,105 tons at United States mills, and 61,171 tons at Newfoundland mills, making a combined total of 146,586 tons compared with 144,823 tons on September 30, 1947, and 203,575 tons at the end of October 1946.

Tampax Plans to Operate Two Plants

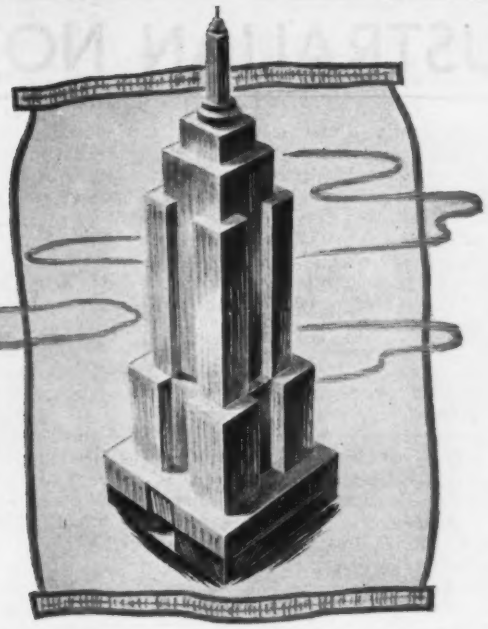
PALMER, Mass. — Following rumors that the Tampax Incorporated plant at Three Rivers was moving out of Palmer, Vice-President Earle A. Griswold stated that the company has been negotiating with the Rutland Electric Company at Rutland, Vt., to purchase mill space there but the plant at Three Rivers would not be effected in any way nor did the company plan to move from here.

The company for some time has had a plant there, he stated, but were leasing the property and were only tenants when the company could purchase the property and become the owners. Negotiations were started and it is expected they will be completed shortly. The acquisition of the new property will naturally provide for some expansion.

Great Northern Votes Extra

BOSTON — Great Northern Paper Company has declared year-end extra of 40 cents and regular quarterly of 40 cents a share, both payable December 1, 1947, to stock of record November 20.

How to wrap up a skyscraper



Towering and fantastic as a wedding cake, a modern skyscraper is as dependent as that cake upon its ingredients.

Just as bakers can't have flour arrive damp and lumpy, so builders must insist that their all-important cement be in first-class condition when it is received.

That's why practically the whole Rock Products industry uses multiwall paper bags to package its construction materials. Heavy-duty Multiwalls can be depended on to protect their contents against moisture penetration and other perils of transit and storage. Yet they are extremely economical. Teamed with high-speed St. Regis bag-filling machines they make a wonderfully efficient operation.

Demand for Multiwalls—to "wrap up" materials for builders, bakers and candlestick makers, as well as from producers of agricultural, chemical and industrial commodities, has greatly expanded St. Regis facilities.

St. Regis scientifically cuts its raw material, pulp-wood, from its own well-managed forests. And manufactures also, in 43 plants in North and South America: Printing, publication and converting papers..."Tacoma" bleached and unbleached sulphate pulp... and Panelyte — the St. Regis structural laminated plastic.

ST. REGIS PAPER *Company*

230 PARK AVENUE, NEW YORK 17, N. Y.

St. Regis Products are sold by St. Regis Sales Corporation: Offices in New York • Chicago • Baltimore • San Francisco and 20 other industrial centers.

IN CANADA: St. Regis Paper Co. (Can.) Ltd., Montreal

ST. REGIS PRODUCTS ARE FASHIONED FROM GROWING TREES TO SERVE ESSENTIAL INDUSTRIES

AUSTRALIAN NOTES

PERTH, W. Australia—Imports of newsprint for July were the largest for over a year, totalling 18,916 tons, compared with the 17,555 tons for June, and the 17,358 tons for July, 1946. Other paper imports for the month were: (Quoted in Australian hundredweights of 112 pounds)—Imitation art, 2,260 (U.K., 2,054; Sweden, 318; Finland, 165; U.S.A., 83); duplex, 482 (all from Sweden); other coated printing paper, 6,411 (U.K., 3,902; U.S.A., 2,228; Norway, 218; Canada, 63); glazed imitation parchment, 746 (Finland, 410; Sweden, 207; U.K., 129); lithographic machine glazed or one side calendered, 1,828 (Finland, 957; U.K., 518; Canada, 208; Norway, 96; U.S.A., 49); offset embossed, 58 (U.K., 32; Canada, 26); poster printings machine glazed, 1,101 (U.K., 903; Finland, 198); and other printing papers, 14,070 (Canada, 3,304; U.K., 3,173; Norway, 2,641; Sweden, 1,732; U.S.A., 1,268; Finland, 1,235; Czechoslovakia, 218; Portugal, 200; Holland, 199).

The Tasmanian Forestry Commismission's annual report states that approximately 150,000 tons of pulp and firewood were used during the year ended June 30, 1947, by the two paper manufacturing companies in that State. The newsprint mills at Boyer used 25,794 cords of pulpwood and 1,146 cords of firewood, while the mills at Burnie used 29,666 cords of pulpwood and 4,918 cords of firewood.

The chairman of Australian Paper Manufacturers Ltd., (Sir Norman Brookes) states that the introduction of the 40-hour week in New South Wales has resulted in a reduced output from the company's Botany mills. He publicly urges all interests to recognize that production must at least be maintained, and if possible increased. "The company's aim," he says, "is to devise a plan, meeting the legitimate needs of employes, shareholders and customers by producing goods in abundance at low prices." It is reported that this firm has now acquired a site for the erection of a new board mill near Brisbane.

The Newspaper Proprietors' Association of New Zealand, in an effort to help Britain through her present crisis by the saving of dollar currency, has accepted a big reduction in the quantity of newsprint to be imported throughout 1948. It is officially announced that the association will reduce its application on behalf of members for the importation of newsprint from Canada and Newfoundland from 27,042 tons to 17,000 tons, thus saving in dollars the equivalent of 450,000 New Zealand pounds, and represents a reduction of 45 percent usage on a prewar basis, as against the present cut of 32 percent.

It is revealed by the Commonwealth Statistician that there are now 1,688 factories in Australia dealing with paper, printing, etc. These include 82 manufacturers of stationery and paper products, 86 manufacturers of cardboard boxes, cartons, corrugated boxes, etc., 37 manufacturers of paper bags, and 12 manufacturers of paper. In the latter category, Victoria has five factories, New South Wales two, Tasmania two, Queensland one, South Australia one, and Western Australia one.

The total number of persons engaged in the manufacture of paper is 4,625 (3,956 males and 669 females), and salaries and wages for the year amounted to £1,525,871 (£1,402,728 males and £123,143 females). Total value of materials used throughout the whole of the industry during the year was 19,140,302 pounds (approximately $91,873,450 at par).

As has been mentioned before, the introduction of the 40-hour working week (which becomes general throughout the Commonwealth in the New Year) is causing manufacturers some concern, but what is more vital in importance is the continuation of industrial troubles and "go slow" policies. Production of coal is generally bad, and cuts in electric power have been general in several States. Shortage of shipping, both overseas and interstate, is extremely serious. Not only are local deliveries delayed, but importation of necessary machinery and raw materials is seriously hampered.

Dock workers, who are in many cases earning as much as $134 a week, are handling far less cargo per hour than was general in pre-war days, and the old saying, "Workers here drop their tools immediately when the whistle blows" is sadly outmoded, for they now drop them long before the whistle is likely to sound. Of course, the greater percentage of workers do give employers fair service, but a small minority, particularly in some of the key industries, are doing their level best to ruin a perfectly good country.

The nationalization of banks is also causing some concern in all quarters, and it is significant that the recent Victorian elections, fought mainly on this issue, resulted in a sweeping defeat for the Labor party. Indeed, it is certain that if the Federal Government went to the polls today they would suffer a like fate.

Finster Retires at Hammermill

ERIE, Pa.—Robert Finster, Sr., a member of the Hammermill Paper Company organization since 1911 and a foreman in the finishing division since 1918, has been retired.

Labor Shortage Bars Norwegian Increase

WASHINGTON — Labor shortages hampered Norway's woodpulp, paper and lumber industries during the 1947 cutting year, according to a report from the American Embassy just received in this country.

The 1947-48 cutting program, it was said, while not definitely set up, is expected to be about the same as this year's which showed a total of 2,600,000 cubic meters of pulpwood cut in the ten-month period ending with April, 1947, compared with the 3,500,000 cubic meters target set for the entire 12 months' period.

Fulfillment of the 1947-48 goal, it was reported, may depend upon an increase in wages for forest workers, as demanded by the forest workers' union, which might bring more workers to the woods, introduction of mechanical saws, already planned by the Norwegian government; and a proposed increase in the price of spruce delivered to rivers or roads.

Mechanical pulp production for sale in the first half, 1947, amounted to 183,300 short tons, compared with 474,000 tons for all 1946. Chemical pulp production, chiefly bleached sulphite, totaled 85,000 tons, compared with 256,300 for the entire 1946 year.

Paper and paperboard production for first-quarter, 1947, was 121,200 tons, compared with 435,600 tons for the entire 1946 year. Output was between 80 and 85 percent of capacity, with newsprint production, included in the above total, at 31,900 tons for the quarter. Newsprint output was at 60 to 80 percent capacity.

Approximately 33 percent of first four months' production of mechanical pulp exports were to the United Kingdom, with 40 percent of wrapping paper production on to the same country. Argentina, with 20 percent, was the leading foreign outlet for newsprint, followed by India, including Burma, and Brazil. Chief markets for printing and writing paper were Argentina, the Union of South Africa and India.

Check List Prepared For Labor-Management

BOSTON, Mass.—That both Labor and Management are aware of the necessity of increasing productivity to meet the demand for steadily mounting pay increases has prompted Freeland, Bates & Harris, Business Management Engineers, at 230 Congress St., to make available to all interested parties a check list and chart entitled "Productivity of Labor." The chart emphasizes the rather startling results of increased productivity starting with an output of $100,000 sales value and a labor cost of $30,000. To effect these results, management must have the answers to a series of questions on the attached check list.

THE MEAD SALES COMPANY
230 PARK AVENUE, NEW YORK 17, N.Y.
111 W. WASHINGTON STREET, CHICAGO 2, ILL.

MEAD
pulp

DISTRIBUTORS OF WOOD PULP
BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

After a day of logging, Paul Bunyan would head back to camp with pocketsful of fast-growing seedlings. It was rumored that he could replant a freshly logged section, single-handed, at the rate of 10 acres to a stride.

A reproduction of this incident from the fabulous life of Paul Bunyan—the twenty-fourth of a series—will be sent on request. It will contain no advertising.

Nashua's Thermo-Kote Uses Twin Forces

NASHUA, N. H. — Thermo-Kote, Nashua Gummed and Coated Paper Company's new delayed action thermoplastic paper, is the result of years of intensive research, both in the laboratory and the field, having as its objective the separation of this heat and pressure union. Thermo-Kote is activated first by heat and then applied under pressure.

Early in 1946 it was realized that the requirements of many different types of industrial users, keenly interested in this new delayed action heat seal paper, could not be satisfied unless development from test tube to practical application in the field was accelerated by enlisting aid of all. Field research was decentralized among scores of manufacturers, bottlers, printers, lithographers, and packaging machine concerns.

Thermo-Kote is being tried out on a multitude of diversified products from ampoules to X-ray plates.

Labelers who are accustomed to water soluble adhesives, which are activated from the adhesive coated side of the label, are learning the problem of driving heat through the label, in order to activate the thermoplastic adhesive. Weight of raw stock, insulating properties of the sheet, bulk, and coat or finish, all have a significant bearing on speed of labeling operation, activation temperatures, and application pressures. The unique difference between Thermo-Kote and conventional thermoplastic adhesives is contained in this relationship between temperature and pressure.

Ordinary thermoplastic labels are activated and applied under a simultaneous action of heat and pressure. Consequently speed of labeling operation is regulated by the length of time it takes to drive the heat through the paper, activate the adhesive, and adhere the label to the product. Obviously, increased temperatures are required to drive heat through heavier label stock, if operating speeds are to be maintained.

To the machine designer this Thermo-Kote's delayed action characteristic means that the resilient member, or label applicator, does not need to contain a heating element. Thermo-Kote is activated by the heating element, the label is then transferred to the pressure element or applicator, which applies the label to the product. A much wider variety of labels can be completely activated within correct temperature ranges, and applied at high speeds to a more diversified line of products. The independent resilient member or pressure applicator is relieved of the responsibility of driving heat through the paper. Activation can be performed over a wide range of time intervals, depending on the nature of the label, by simply regulating the distance each label travels over the heating element.

To the labeler the advantages are numerous. Complete activation of labels can be insured by proper design of the heating element. High speed operation of labeling equipment is certain over a wide range of label papers, because speed of label applicator is not affected by the time required for heat to penetrate the label and activate the adhesive. The only limiting factor on output is machine speed of applicating device or pressure member.

Thermo-Kote offers the advantages of conventional thermoplastic papers, such as elimination of variables like humidity, temperature, and consistency of water soluble adhesives, as well as the ever present problem of make ready and clean up.

Thermo-Kote also has the advantage of activating within definite temperature ranges. This means that Thermo-Kote does not block under normal storage or plant conditions where temperatures do not exceed 125°F.

Paper Manufacturers Vets Hold Annual Dinner

PHILADELPHIA — The Quarter Century Club of Paper Manufacturers Company held its fourth annual banquet at the Barclay recently, and it was the unanimous opinion of all the members that it was "the best yet."

As has been the custom, a period of silence was observed in memory of the six deceased members: Frank A. O'Neill, John A. O'Neill, John H. Moffatt, Nelson Sanderson, William C. Carpenter and Sara B. Montague.

Wayne Hess, of the sales department, and John Hunter, of the slitting department, were inducted into membership of this club, making a total of 19, both active and retired.

Jim McKee, sales maanger, acted as toastmaster, introducing the speakers of the evening who were Frank and Louis O'Neill, Frank W. Coar, Vince Dirvin, and the other two newly elected members, Messrs. Hess and Hunter.

Frank and Louis O'Neill presented each member with a gift in recognition of their long and loyal service.

A-C Promotes Prince

MILWAUKEE — Robert K. Prince has been named manager of the wood processing machinery section of the Allis-Chalmers basic industries department. Holder of a chemistry degree from Worcester Polytechnic Institute, Prince was associated with E. I. du Pont de Nemours & Company, Inc., the Pulp Bleaching Co., Orange, N. J., and its affiliate, the D. J. Murray Manufacturing Co., Wausau, Wis., for eight years prior to joining Allis-Chalmers in 1943. Subsequently, he was named engineer-in-charge for the cellulose industries in the Allis-Chalmers industrial sales department.

Boston Trade Dines At Parker House

BOSTON—As at all gatherings of the Boston Paper Trade Association, the fall meeting and dinner of the organization in the Roof Ball Room of the Parker House, November 12, was a most happy occasion. The number present was lessened by the inclement weather, although 165 attended out of 187 acceptances. Reception was at 6 o'clock. Dinner was served after the singing of the Star Spangled Banner, and during the evening piano selections and a vocal soloist assisted in making things lively.

In a business meeting, called to order by President James R. Carter II, the following, whose names were on the program were elected members: Regular membership, Eugene H. Clapp, Tileston & Hollingsworth Co.; Paul W. Lowney, The Pratt Paper Co.; Frederic H. Ingraham, The Pratt Paper Co., and George R. Wallace, 3rd, Fitchburg Paper Co. Limited membership, William Kemp, Jr., Crocker-Burbank Co., and R. S. Rowlett, Brown Bridge Mills, Inc. In addition to these, three other new members were elected, as follows: Neil S. Beckwith, Carter Paper Co., E. F. Woodin, W. C. Hamilton & Sons, and John G. Glover, Lewis Brownville Sales, Inc.

The following were appointed members of the nominating committee, to report at the March meeting: Charles Proctor, chairman; John W. Vivian, John Halkyard, Robert M. Stone, and C. Edward Rice.

Matthew O. Byrne, chairman of the special finance committee, reported their recommendation for a change in the By-Laws, as follows, which was approved:

Under Article XIII (Limited Membership) insert "At the discretion of the Executive Committee an assessment of ($5.00) five dollars may be levied."

Under Article XIV (Regular Membership) insert "An extra assessment of ($5.00) five dollars may be levied on all Regular members at the discretion of the Executive Commitee."

Officers of the Boston Paper Trade Association are: James R. Carter II, president; W. N. Stetson, Jr., 1st vice-president; F. Henry Savage, 2nd vice-president; T. Charles Casey, treasurer, and Frank B. Cummings, secretary.

Goodrich Promotes Hookway

AKRON, O. — Ernest Hookway has been appointed operating manager of the recently created Plastic Materials Sales Division of the B. F. Goodrich Company, it is announced by L. H. Chenoweth, division general manager. Hookway has been with the company since 1936, and for the last two years had been a senior development man in the industrial products division.

No Guesswork about Protection...

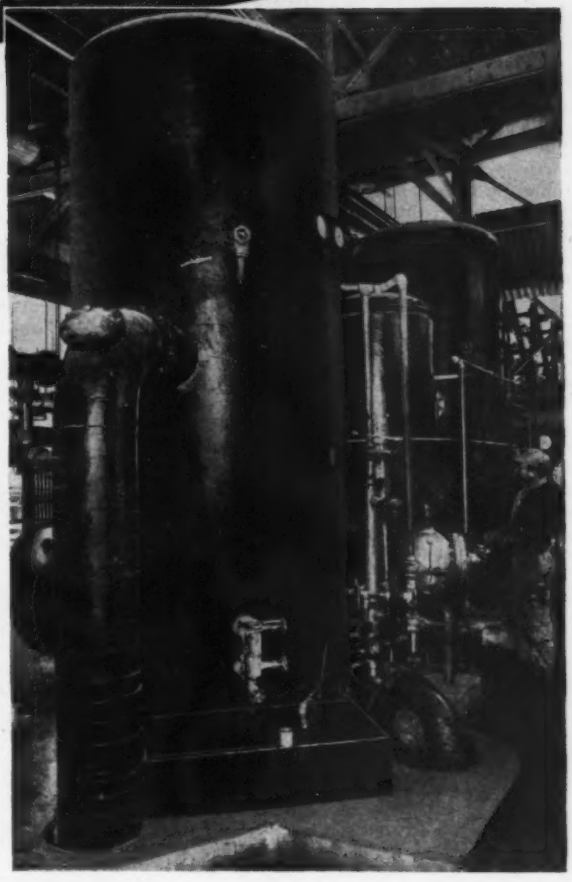
No Easier Way to Cut Costs

You can save as much as 50 per cent on material costs with Lukens Clad Steels—and still provide "solid" protection against corrosion and contamination. Positive control over the uniformity of cladding thickness gives you the *exact* protection your equipment and products require. There's *no guesswork* about it! And you can specify the cladding best suited for your problem . . . nickel, Inconel, Monel or any standard type of stainless.

Lukens precision method of cladding cuts costs in other ways, too. The bond between cladding metal and ASME quality steel backing is *permanent*. Commercial methods for bending, shearing, pressing or welding are employed.

For *extra* savings choose the widest plate you can use. Shortens fabrication time . . . cuts welding footage costs. Lukens Clad Steels are available in plates up to 178″ wide, or from 3/16″ to over 3″ thick.

Information on money-saving Lukens Stainless-Clad Steels is contained in Bulletin 338; on Nickel-Clad, Inconel-Clad and Monel-Clad Steels, in Bulletin 255. For your copies, write Lukens Steel Company, 403 Lukens Building, Coatesville, Pennsylvania.



Buffalo Foundry & Machine Co., Buffalo, N. Y., used 20% Lukens Nickel-Clad Steel in fabrication of this double-effect, forced circulation type evaporator, handling electrolytic caustic soda for pulp production.

★ ★ ★

Be sure to see us at Booth Nos. 558-563 at the Chemical Show, New York City, December 1-6. Find out how you can get solid metal advantages with clad steel economy.

LUKENS

Nickel-Clad Stainless-Clad
Inconel-Clad Monel-Clad
STEELS

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

Harriman Report

(Continued from page 9)

of the war in varying degrees. Domestic production has increased tremendously since 1945 so that in 1947 paper and paperboard output will be 55 per cent or 7,500,000 tons more than in 1939. The monthly trend in domestic production has been generally upward since V-E day, with the advent of new equipment and new capacity, together with larger pulp output, increased pulp imports from Canada, and a resumption in pulp imports beginning in the summer of 1945 from Northern Europe, especially Sweden. In fact, estimated United States 1947 production of paper and board will be about 21,000,000 tons, compared with about 17,400,000 tons in 1945.

"With additional domestic pulp and paper capacity coming into production in near future months it is believed that around the Spring of 1948 supplies of most grades of paper (excluding newsprint) will approximate domestic consumption requirements.

"Assuming that the total United States economy will continue at peak levels through 1948, which would mean some additional expansion in paper requirements, it may be estimated that both pulp and paper supplies will just about balance customers' needs during 1948.

"This estimate however, assumes that there will be no material increase in exports of pulp, paper or paper products from the United States nor that there will be any substantial change in the relative volume of pulp and newsprint imports from Canada, Newfoundland and Northern Europe. If pulp imports were materially reduced in 1948 from the 1947 level of around 2,400,000 tons, it would result in a serious curtailment in operations of United States paper mills depending in whole or in part upon purchased market pulp. These United States paper mills make large percentages of many important grades of paper essential to the United States economy.

"Newsprint is the only major item which is expected to continue in substantially short supply throughout 1948. It will be at least 1949 or 1950 before the new newsprint mill now underway at Childersburg, Alabama, will be in production. New newsprint machines in Canada and Newfoundland may come into production somewhat earlier. The Alaskan prospectus may or may not result in a newsprint mill; if it does, it will be at least 1950 before output could be placed upon the market. No noticeable relief is anticipated from Northern European newsprint production in the next couple of years.

"There is no significant interference with industrial activity in the United States due to lack of pulp and paper products and, in general, demand is being satisfied.

"On the basis of estimated 1947 United States production, and with paper and paperboard exports ranging around 355,000 tons for the year, exports will be about 1.4 per cent of production compared with 1.5 per cent to 2 per cent in prewar years. In view of some increase in production in 1948, it should be possible to increase exports by an additional 1 per cent or 2 per cent of production. This would mean exports of paper and paperboard in 1948 would total about 665,000 tons.

"If the increase in exports were all directed to Europe, plus a possible switch of some tonnage now going to other destinations, the total available for Europe would be about 350,000 tons.

"It is estimated that a similar percentage increase in paper products (shipping sacks, bags, shipping containers, etc.) will be possible if United States production reaches expected levels. With respect to converted paper products the United States will export in 1947 about 120,000 tons; this could be raised to a total of about 250,000 tons in 1948.

"The World's pulp and paper supply-requirements picture is more out of balance than that of the United States. The general upheaval of economic and industrial activity in Europe, U.S.S.R., Japan, China, the United Kingdom and to a lesser degree, India and other British dominions, has resulted in sharply curtailed production as well as consumption compared to pre-war. In Europe coal is the major element retarding larger pulp and paper production in Sweden, Norway and Finland and to a lesser degree, on the continent. On the continent most mills find it difficult to procure not only necessary raw materials (pulpwood, pulp, coal and chemicals) but also machinery parts and equipment.

"Notwithstanding the lower level of economic activity in many foreign countries as cited above, the actual requirements of pulp and paper are substantially above available supplies.

"More specifically, Sweden, Norway and Finland are currently the major sources of paper and pulp production and exports in the European area, although before the war Germany, France, Belgium, the Netherlands, England, and a few other European countries were significant exporters of paper but not of pulp.

"It is known that about 20 per cent of Finnish capacity is now in territory ceded to the U.S.S.R., while the mills in the Baltic countries (Latvia, Lithuania and Esthonia) are also now a part of the U.S.S.R. Russia continues largely as self-sufficient, neither a notable exporter nor importer. Norway, although a significant producer and exporter of pulp and paper, is far outranked by Sweden and Finland. It is estimated that Sweden, Finnish and Norwegian pulp mills are currently operating at from 50 to 70 per cent of capacity. Particularly in the case of Sweden, production could be stepped up greatly if sufficient coal, and perhaps certain chemicals were available."

With particular reference to newsprint, said the committee, the solution appears to rest in stimulating Northern and Continental European production.

"An increase in exports from the United States cannot be recommended," the committee stated flatly.

The committee also pointed out that European requirements of paper and paperboard from this country could best be handled by channeling through established United States paper exporters and established paper importers in Europe, rather than setting up government-to-government procedure for actual transactions.

Resuming quotations:

"Before the war Germany was the world's fourth largest producer of wood pulp and the third largest consumer in the manufacture of paper, paperboard and rayon products. Reports indicate that the Russian occupied zone now comprises around 60 per cent of prewar pulp and paper production, leaving around 40 per cent in the United States, British and French zones. Recent reports indicate that pulp and paper mills in the United States zone are only able to operate at about 35 per cent of prewar output because of lack of pulpwood, coal and manpower. A substantial part of present chemical pulp output is stated being diverted to rayon for use in textiles. Pulp wood is a particularly serious problem because a large part of prewar supplies were obtained from eastern Germany, Finland and Russia, while currently it is understood that none is coming in from those sources. The lack of coal is also causing the use of more wood for fuel. If these problems could be overcome Germany could again be an important factor in pulp and paper production for her own use as well as to export to other European countries. In prewar years Germany was a very important paper exporter.

"Both pulp and paper output of several continental European countries could be increased if machinery parts were procurable and supplies of raw materials, such as pulpwood, pulp, and chemicals, were accessible. Numerous continental paper mills, however, such as in the Netherlands, Belgium, France, as well as England, depend largely upon imported pulp. Until Northern European pulp mills are able to step up production materially, pulp supplies will be short to meet all foreign requirements from that important pulp producing and importing region. Besides continental Europe and the United Kingdom, there is a strong demand for Northern European pulp from the United States, Mexico, several South American countries, Australia, New Zealand, India, China as well as Japan. Not only is paper grade wood pulp in short supply but also dissolving grades of wood pulp as used for rayon, cellophane, plastics, etc. As a consequence, therefore, the world's supply of pulp and paper in general is currently, and prospectively for 1948, insufficient to meet all consump-

(Continued on page 44)

THE CHEMIPULPER

as used with the

PANDIA FIBRILATOR

Now you can get

CONTINUOUS PRODUCTION

of CHEMICAL and SEMI-CHEMICAL PULPS

From hard woods . . . soft woods . . . mixed woods. Pulps for paper and paper board, .009 board and dry felts. Suitable for straw, bagasse, etc.

Ask for Catalog

The Answer to Continuous Cooking

•

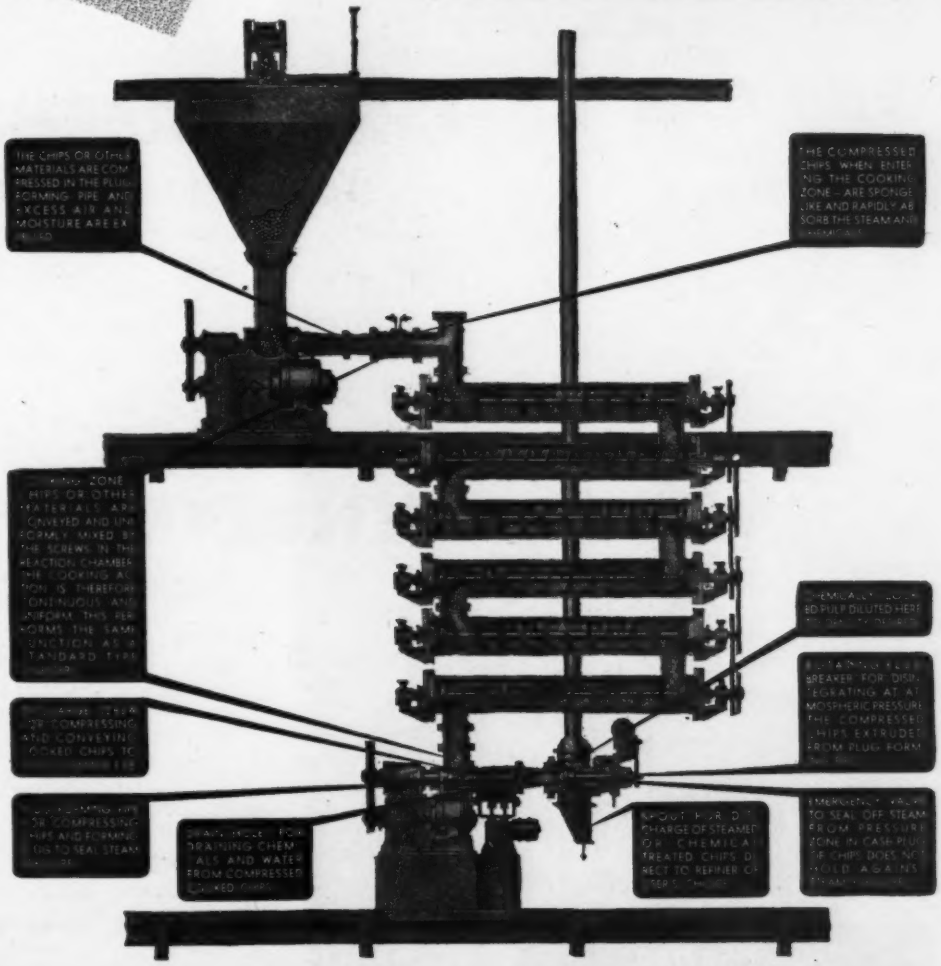
Built for Working pressures up to 300 lbs.

•

Reasonably Priced

•

Illustration shows combination of PANDIA FIBRILATOR with three-unit REACTION-CHAMBER


THE CHIPS OR OTHER MATERIALS ARE COMPRESSED IN THE PLUG FORMING PIPE AND EXCESS AIR AND MOISTURE ARE EX
THE COMPRESSED CHIPS WHEN ENTERING THE COOKING ZONE—ARE SPONGE LIKE AND RAPIDLY AB SORB THE STEAM AND
CHEMICALLY COOKED PULP DILUTED HERE
BREAKER FOR DISINTEGRATING AT ATMOSPHERIC PRESSURE THE COMPRESSED CHIPS EXTRUDED FROM PLUG FORM
EMERGENCY VALVE TO SEAL OFF STEAM FROM PRESSURE ZONE IN CASE PLUG OF CHIPS DOES NOT HOLD AGAINS
DRAINING ZONE CHIPS OR OTHER MATERIALS ARE CONVEYED AND UNIFORMLY MIXED BY THE SCREWS IN THE REACTION CHAMBER THE COOKING ACTION IS THEREFOR CONTINUOUS AND UNIFORM THIS PERFORMS THE SAME FUNCTION AS A STANDARD TYPE
DRAINING CHEMICALS AND WATER FROM COMPRESSED COOKED CHIPS

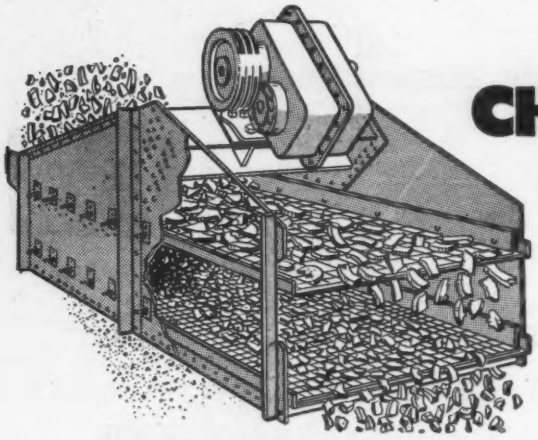
Patented and Patents applied for in U.S.A. and Foreign Countries.

PAPER and INDUSTRIAL APPLIANCES, INC.

122 EAST 42nd STREET NEW YORK, N. Y.

Problem:

Pulp-Making Costs are Up; so is Pulp Quality! But is Your Margin of Profit Up Proportionately?



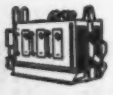
CHIP SCREENS *that Give You Highest % of Uniform Chips!*

STRAIGHT-LINE MOTION of horizontally-operating "Low-Head" screen—with vibratory action on 45° angle—separates *highest percentage of uniform chips* . . . contributes to higher quality pulp. Long slivers do not lodge in screen openings. However, if your operations require no more than an *average* percentage of uniform chips, the lower-cost "Ripl-Flo" inclined vibrating screen may serve your needs. Both screens are described in **Bulletin 07B6353.**

KNOTTERS *that Give You Higher Knotting Capacity!*

STEPPED-UP CAPACITY . . . cleaner pulp . . . fiber loss of less than one pound per ton of feed for most pulps — that's what the "Low-Head" knotting screen can do for you! Completely visible screen deck — with controlled adjustable sprays — conveys rejects to discharge end without pile-up. This screen is also used for groundwood screening . . . dewatering rejects . . . bark dewatering. For more details send for **Bulletin 07B6592.**

Cost-Saving, Quality-Building Products for Pulp & Paper!



PREPARATION— Hydraulic Barkers, Chip Screens, Saws, Slashers.

COOKING — Digesters, Blow Tanks, Kilns, Heat Exchangers.

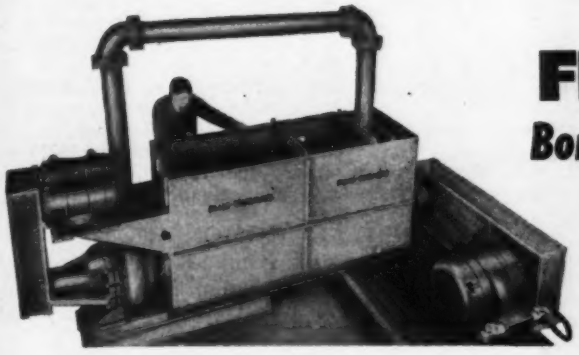
POWER — Generation, Distribution and Control equipment.

TEXROPE V-belt drives to 5000 hp—constant and adjustable speed.

PUMPS — Single and Multi-Stage to 150,000 gpm — Stock pumps.

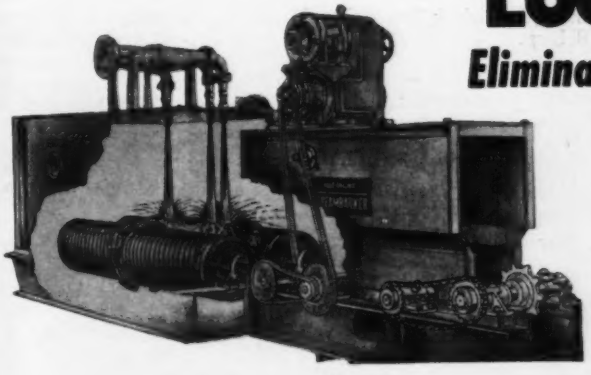
Solution:

Drive Out Hidden Inefficiencies in your Process! How? With Cost-Saving, Quality-Building A-C Equipment!



FEEDERS *that Move 8% Bone-Dry Pulp Without Air Binding!*

SAVE TIME, STEAM AND STORAGE SPACE with this new Allis-Chalmers product that pumps 8 percent *bone-dry* chemical pulps *with no air binding!* Shaft and vane assembly moves pulp into inlet of Allis-Chalmers stock pump at a *continuous, uniform rate.* Vane pitch setting can be adjusted for pulps of various consistences. All "Hi-Density" Feeder parts contacting pulps are made of stainless steel, preventing rust discoloration. Send for **Bulletin 08B6725.**



LOG BARKERS *that Eliminate Brooming, Dirt, Surface Rot!*

"STREAMBARKER" DOES A QUICKER JOB of barking—hydraulically—*greatly reduces wood loss!* Capacity 8 to 14 cords of pulpwood per hour. Handles pulpwood sticks 4 to 8 ft long; 4 to 18 in. in diameter. Ask the A-C representative in your locality for "Streambarker" **Bulletin 26B6341.** He can give you helpful information about other products that have been developed by Allis-Chalmers for pulp and paper. ALLIS-CHALMERS, MILWAUKEE 1, WISCONSIN. A 2359

Low-Head, Ripl-Flo, Hi-Density, Streambarker are Allis-Chalmers Trademarks.

ALLIS-CHALMERS

One of the Big 3 in Electric Power Equipment—Biggest of All in Range of Industrial Products

IMPORTS

NEWSPRINT

R. A. Olsen, Inc., G.T.D., Donnacona, 362 rolls.
H. G. Craig Co., Newscarrier, Donnacona, 345 rolls.
R. A. Olsen, Inc., Donpaco, Donnacona, 373 rolls.
H. G. Craig Co., A.C.D., Donnacona, 341 rolls.
R. A. Olsen, Inc., Kermic, Donnacona, 381 rolls.
Montmorency Paper Co., Empire Caicos, Botwood, 4149 rolls; 1766 rolls (to Alexandria, Va.).

CIGARETTE PAPER

Dibrelle Bros., City of Eastbourne, Auckland, 6 cs.

WRAPPING PAPER

Public National Bank Trust Co., Drottningholm, Gothenburg, 101 bls.

WALLPAPER

J. J. Morrow, Pres. Monroe, Shanghai, 5 cs.

KRAFT PAPER

Price & Pierce, Ltd., Drottningholm, Gothenburg, 355 rolls.
Bulkley Dunton Co., Drottningholm, Gothenburg, 258 bls.

PAPERHANGINGS

W. H. S. Lloyd & Co., American Farmer, London, 12 bls., 1 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Farmer, London, 18 cs.

DRAWING PAPER

H. Reeve Angel & Co. Inc., American Farmer, London, 2 cs.

PHOTO PAPER

Lep Transport Inc., American Farmer, London, 32 cs. (base).

SULPHITE PAPER

A. Weitzmans Son, Mormaclark, Gothenburg, 367 rolls.

LAMINATED PAPER

Paul Ward Brady, Queen Mary, Southampton, 5 cs.

GUMMED PAPER

B. F. Drakenfeld & Co., Media, Liverpool, 40 cs.

PRINTING PAPER

Oxford University Press, Media, Liverpool, 11 cs.
Ford & Agricultural Organization, Robert Maersk, Antwerp, 120 cs.

WRITING PAPER

R. H. Macy & Co., Gainesville Victory, Antwerp, 1 cs.

PAPER SERVIETTES

Graham Inc., Westerdam, Rotterdam, 18 bls.
(———), Media, Liverpool, 6 rolls (crepe), 9 cs. (printed).

GLAZED PAPER

Walker Goulard Plehn Co., Media, Liverpool, 4 cs.

MISCELLANEOUS PAPER

Guaranty Trust Co., Drottningholm, Gothenburg, 132 rolls.
George Macy Co., Norwalk Victory, Rotterdam, 87 cs.
Steege Paper Co., Aalsdyk, Rotterdam, 1 crate.

RAGS, BAGGINGS, ETC.

Chase National Bank, Villar, Buenos Aires, 30 bls. woolen waste.
E. J. Keller Co. Inc., Mormacelm, Santos, 89 bls. new white & unbleached hosiery clips.
A. de Vries Trading Corp., Gainesville Victory, Antwerp, 40 bls. old waste bagging.
(———), Media, Liverpool, 65 bls. new wool rags.
Continental Bank Trust Co., Skagway Victory, Venice, 65 bls. rags.
Banco Commitalo, Skagway Victory, Venice, 162 bls. rags.
Guaranty Trust Co., Excelsior, Leghorn, 423 bls. old linsey garments.
Royal Manufacturing Co., South Star, Antwerp, 104 bls. cotton waste.
New England Waste Co., Pres. Monroe, Shanghai, 470 bls. cotton waste.
A. W. Fenton Co., Pres. Monroe, Naples, 172 bls. dark cotton rags.
Concentra Shipping Co., Pres. Monroe, Naples, 219 bls. dark cotton rags.

CASEIN

National City Bank, Villar, Buenos Aires, 5000 bags.
F. H. Paul & Stein Bros., Irish Splice, Pt. au Prince, 8 bags.

GLUESTOCK, ETC.

Transatlantic Animal By-Products Inc., Mormacelm, Rio Grande, 500 bags sheet bone glue.
John Gorvers Co., Cape Isabel, Barranquilla, 100 rolls hidecuttings.
Karr Ellis Co., Media, Liverpool, 629 bags gluestock.
Transatlantic Animal By-Products Inc., Jutahy, Fortaleza, 200 bags bone glue.

WOODPULP

Elof Hansson, Inc., Mormaclark, Gothenburg, 1 parcel.

ALBANY IMPORTS

WEEK ENDING NOVEMBER 15, 1947

Pagel Horton & Co. Inc., Milos, Gefle & Karskar, 7031 bls. woodpulp, 9500 bls. dry sulphite pulp.
Bulkley Dunton Pulp Co., Milos, Gefle & Karskar, 762 bls. dry sulphite pulp.
Gottesman & Co. Inc., Milos, Hernosand, 12181 bls. 1st quality kraft sulphate pulp.

NEW YORK IMPORTS

WEEK ENDING NOVEMBER 15, 1947

SUMMARY

Newsprint	7717 rolls
Cigarette Paper	6 cs.
Wrapping Paper	101 bls.
Wallpaper	5 cs.
Kraft Paper	355 rolls, 258 bls.
Paperhangings	12 bls., 1 cs.
Filter Paper	18 cs.
Drawing Paper	2 cs.
Photo Paper	32 cs.
Sulphite Paper	367 rolls
Laminated Paper	5 cs.
Gummed Paper	40 cs.
Printing Paper	131 cs.
Writing Paper	1 cs.
Paper Serviettes	18 bls., 9 cs.
Glazed Paper	4 cs.
Miscellaneous Paper	132 rolls, 87 cs., 1 crate

Cellulose Sales Co., Milos, Hernosand, 652 bls. sulphate pulp.
Pagel Horton & Co. Inc., Milos, Husum, 8912 bls. dry sulphate pulp.
Price & Pierce, Ltd., Bernhard Ingelsson, Wallvik, 12000 bls. dry sulphate pulp.
Pagel Horton & Co. Inc., Bernhard Ingelsson, Gefle, 6236 bls. woodpulp.
Cellulose Sales Co., Bernhard Ingelsson, Stugsund & Sandarne, 3215 bls. air dry sulphite pulp, 9300 bls. air dry sulphate pulp.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 15, 1947

International Purchasing Co., Gainesville Victory, Antwerp, 85 coils old rope.
(———), Augustana Victory, Antwerp, 83 bls. old bagging.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 15, 1947

A. F. Feuerman, Skagway Victory, Venice, 120 bls. old dark cotton rags.
National City Bank, Mormaclark, Gothenburg, 59 rolls wrapping paper.
Price & Pierce, Ltd., Mormaclark, Gothenburg, 750 bls. strong sulphite pulp.
Pulp & Paper Trading Co., Mormaclark, Gothenburg, 600 bls. bleached sulphite pulp.

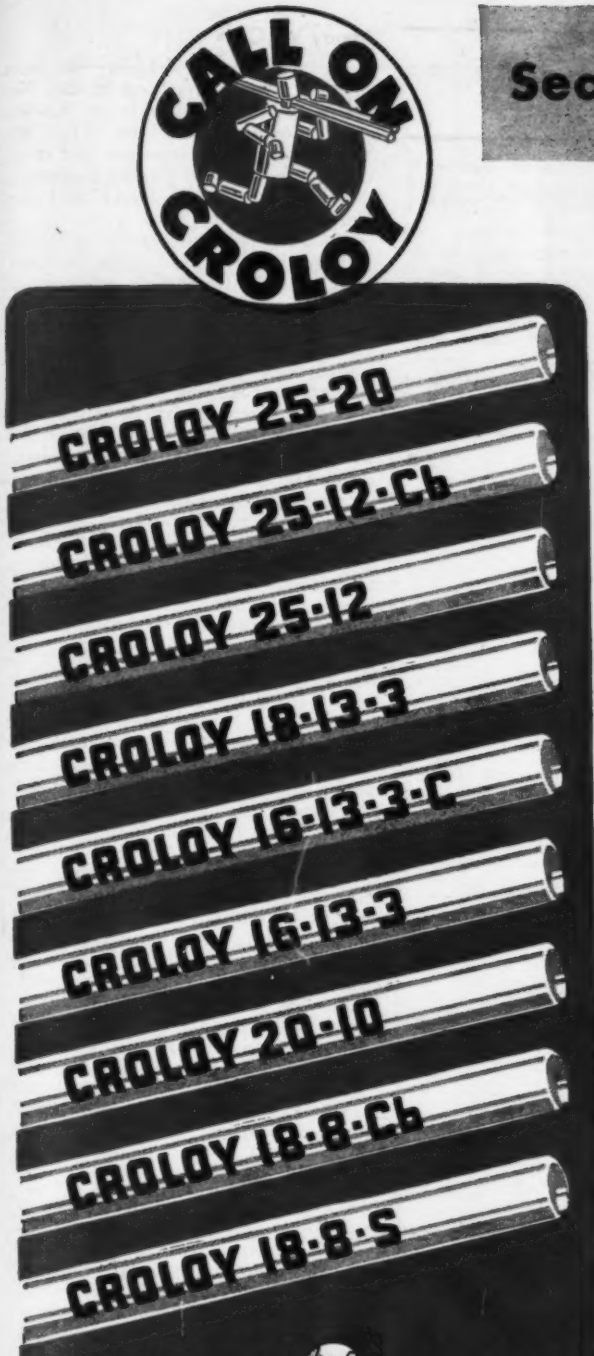
BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 15, 1947

Gottesman & Co. Inc., Milos, Hernosand, 913 bls. half prime strong sulphite pulp, 1218 bls. perforated 1st quality kraft pulp.
Cellulose Sales Co., Milos, Hernosand, 2790 bls. sulphite pulp, 1350 bls. sulphate pulp.
Pagel Horton & Co. Inc., Milos, Karskar, 5671 bls. woodpulp.

NORFOLK IMPORTS

E. Butterworth & Co., Norwalk Victory, Antwerp, 56 bls. old bagging.
Norwalk Victory, Antwerp, 57 bls. old waste bagging.



Seamless and Welded

STAINLESS STEEL TUBES

for ANY PURPOSE in PAPER MILLS

In Croloy Stainless Tubing, B&W offers you the widest variety and number of analyses available from a single source—many of them obtainable from no other supplier. So no matter what grade you need to combat corrosion, oxidation, contamination or other adverse operating conditions in paper making processes, B&W can supply it. Where you "Call on Croloy" you are always certain of getting stainless tubing that will give you the maximum return on investment in terms of long, trouble-free service life.

Send for Technical Bulletin No. 1 containing factual data on Croloy Stainless Tubing.

TA-14065

Seamless and Welded Tubular Products in a full range of Carbon, Alloy, and Stainless Steels for All Pressure and Mechanical Applications.

☆ ☆ ☆

Other B&W Products

THE BABCOCK & WILCOX CO.
85 LIBERTY STREET · NEW YORK 6, N. Y.

Stationary and Marine Boilers . . . Boiler Components . . .
Pulverizers . . . Fuel Burning Equipment . . . Refractories . . .
Chemical Recovery Units . . . Process Equipment . . .
Alloy Castings.

BABCOCK & WILCOX
SEAMLESS & WELDED TUBES
THE BABCOCK & WILCOX TUBE COMPANY
GENERAL OFFICES: BEAVER FALLS, PA.
PLANTS: BEAVER FALLS, PA. AND ALLIANCE, OHIO.

OBITUARY

Joseph E. Colton

PITTSFIELD, Mass.—Joseph E. Colton, 89, retired paper manufacturer, died recently at House of Mercy hospital after a short illness.

In 1882, Colton purchased the Valley Paper Company in this city and seven years later disposed of the business. He then went with the Owen Paper Company in Housatonic. In 1890 he became associated with the later Arthur W. Eaton in the Berkshire Typewriter Paper Company. Later the business was consolidated with the Hurlbut Paper Company. In 1908 the business was changed to the Eaton, Crane & Pike Company. Colton retired in 1928 and the following year the Eaton, Crane & Pike Company was reorganized at the Eaton Paper Corporation.

He is survived by two sons, William W. and Robert H.

We're making a slight change...

● Effective November 1st, 1947, The Solvay Process Company and Solvay Sales Corporation have been merged into their parent company, Allied Chemical & Dye Corporation. The business of the merged companies will be continued under the name "THE SOLVAY PROCESS DIVISION, Allied Chemical & Dye Corporation" and "SOLVAY SALES DIVISION, Allied Chemical & Dye Corporation," respectively—with no change in personnel. Neither will there be any change in the traditional quality of Solvay products . . . nor in the dependable Solvay service which has been helping American industry for over sixty-six years.

● In other words, except for changing the lettering on the doors, our sales offices will continue as before at the addresses listed below.

SOLVAY SALES DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector St., New York 6, N. Y.

Branch Sales Offices:

45 Milk Street	Boston 9, Mass.
212 South Tryon Street	Charlotte 2, N. C.
1 North LaSalle Street	Chicago 2, Ill.
3008 Carew Tower	Cincinnati 2, Ohio
926 Midland Building	Cleveland 15, Ohio
7501 West Jefferson Ave.	Detroit 32, Mich.
921 Main Street	Houston 2, Texas
1107 Pere Marquette Bldg.	New Orleans 12, La.
43 Exchange Place	New York 5, N. Y.
12 South 12th Street	Philadelphia 7, Pa.
1107 Gulf Building	Pittsburgh 19, Pa.
3615 Olive Street	St. Louis 8, Mo.
Milton Avenue	Syracuse 1, N. Y.

SOLVAY

Henry W. Clark

PAWTUCKET, R. I.—Henry W. Clark died of a heart attack on Friday, November 7, in his office at the Atwood Paper Company, Brockton, Mass. Mr. Clark was general manager and treasurer of the Atwood Paper Company, a division of the Industrial Paper and Cordage Company.

He had been associated with the Industrial Paper and Cordage Company since 1931, serving as assistant general manager and assistant treasurer until that company absorbed the Brockton concern, of which he assumed direction in 1945.

Born in Essex, Conn., in 1895, he was a graduate of Northeastern University, Providence. Surviving are his widow, Mrs. Isabel (Campbell) Clark; a son, Harrison Bruce Clark; a daughter, Dona Jean Clark; two brothers and one sister. The funeral was held Monday, November 10, at the Mortimer Peck Funeral Home in Braintree, Mass.

Nathaniel F. Bartlett

EAST WALPOLE, Mass.—Nathaniel F. Bartlett, 65, traffic manager for Hollingsworth & Vose Company here, died November 7, having been stricken at his desk. He entered the employ of the company September 13, 1913. Formerly a resident of Swampscott, Mass., he recently lived in Norwood, Mass.

Widely known in the eastern section of this country, he had been a leader in civic affairs in Swampscott for years, as well as among his business associates. Funeral services were held at the Richardson Funeral Home, Lynn, Mass., with Rev. Harold W. Beeker, of the Baptist Church, officiating. The scores of floral tributes attested to the respect in which he was held among his old friends and neighbors in Swampscott. Included in the tributes were those sent by fraternal organizations, of which he was a keenly active member.

Clinton H. Taylor

ALBANY, N. Y.—Clinton H. Taylor, 64, a former paper manufacturer, died recently at his home. Born in Jersey City and a former resident of Troy, he came to Albany in 1919 and became associated with the Fischel Paper Company. In 1923 he formed the Potter-Taylor Paper Company with Edgar L. Potter. Mr. Taylor sold his interest in the company in 1934.

Ralph J. Dalton

BRIDGEWATER, Mass.—Ralph J. Dalton, plant engineer of the George O. Jenkins Company for the past ten years, died recently at a Boston hospital, following a long illness. He was 54 years of age. Before coming to the Jenkins company, he had been associated with manufacturers of paper mill machinery and with the United States Rubber Company in Cleveland. He had many friends in the paper and allied industries.

a repeat order

North Carolina Pulp Company

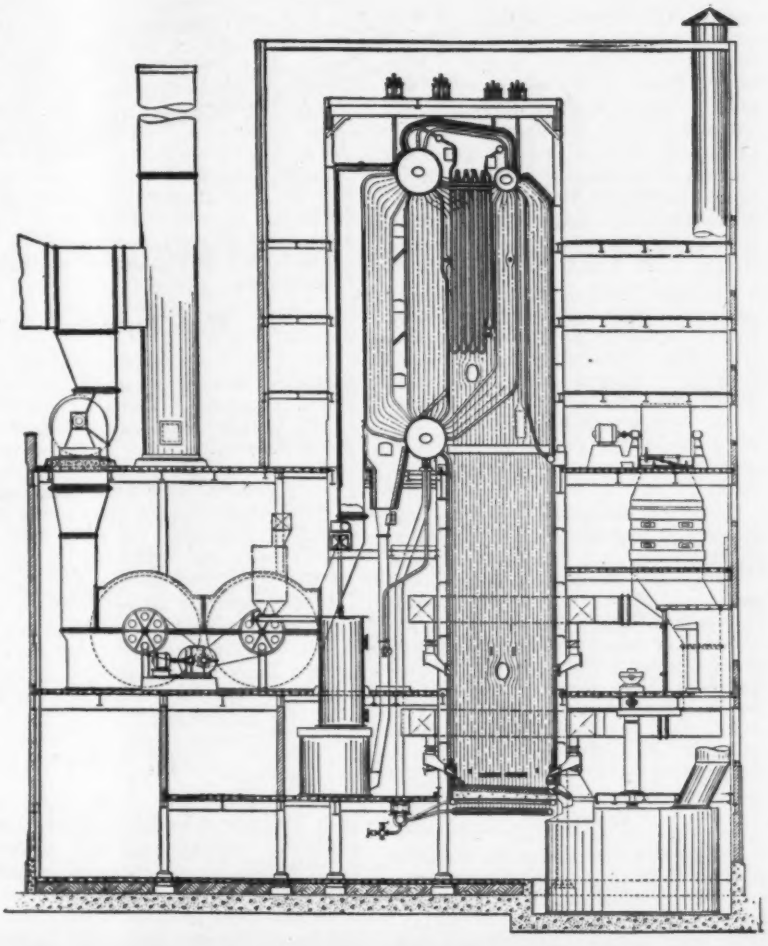
selects the C-E RECOVERY UNIT!

A C-E Recovery Unit, cross-sectional elevation of which is shown at the right, was recently purchased by the North Carolina Pulp Company (a wholly-owned subsidiary of the Kieckhefer Container Company), for their mill at Plymouth, N. C.

The unit is designed to burn 825,000 pounds of black liquor solids per 24 hours and will produce steam at 650 psi and 700 F.

This is the second repeat order for this equipment by the North Carolina Pulp Company, units of the same general design having been previously placed in service in 1940 and 1946. The purchase of this latest unit is made, therefore, in the light of previous experience with similar . . . virtually duplicate . . . equipment.

B-189



COMBUSTION ENGINEERING

200 MADISON AVENUE • NEW YORK 16, N. Y.

C-E PRODUCTS FOR THE PAPER INDUSTRY INCLUDE STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT. ALSO MANY TYPES OF PRESSURE VESSELS

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 19, 1947.

The tense situation on supply and demand within the industry as a whole was worsened this week by conjecture over the immediate and far reaching effects of European aid on the world's supply of pulp and paper; and with the same commodities representing the largest dollar value of all our imports, similar concern was expressed about the change in tariffs agreed upon but not yet announced. Generally an atmosphere of sustained apprehension prevailed.

It is reported that by 1948 we could export sizable quantities of paper to the European market though a scarcity persists on so many items that present exports must be limited. Should Sweden decrease her shipments of pulp to Europe and add the tonnage to our imports in exchange for dollars, we should have to reship to Europe to aid in recovery; thus little would be gained except the extra tonnage for oceanic freight.

Estimates have it that the world's pulp and paper industry may almost double in capacity in the next fifty years, that sulphate pulp may sometime eliminate sulphite from the scene, though advances to be made in waste liquor recovery, more scientific cooking procedures, et cetera may assist sulphite manufacturers to stay in the market.

Generally, shortages continue in coated and book papers, duplicator and offset papers, rag grades, manifolds, cover stocks, bristols, onionskin, text, index, and the usual newsprint, wrapping papers, commercial and toilet tissues, locker paper and gummed paper. Envelopes and facial tissues are plentiful as well as some of the writing papers. Combination deals of items in short supply being sold only with those in stock are losing appeal and generating bitterness.

Woodpulp

News of the week was the advance in Finnish prices for the first quarter of 1948. Bleached sulphite rose to $185 from $175, unbleached sulphite to $155-$157 from $145-150, and unbleached kraft to $147.50 from $140. It is not expected that Swedish prices will be announced much before the spring when quantity shipments begin again.

It is reported that the forests of Northern Europe are unlikely to be able to support new pulp producing capacity unless the annual cut is in excess of annual growth, a procedure entirely contrary to sylviculture practice long-established in these countries. It is well-known that even full prewar capacity may be difficult to reach on account of the shortage. Also it is interesting to note that Swedish shipments of pulp to Latin-American countries in 1946 were 40.63 percent greater than in 1939.

Newsprint

Another rumor was floated from Montreal regarding the rise in newsprint prices to meet rising costs of production, and it was felt that such an increase of at least $8 to $10 a ton would be inevitable. Most newsprint sold on contract now brings $90 a ton here in New York, but some is sold in small amounts for $200 and more.

It is reported that Canada is alerted to the long-range threat to her newsprint industry in the Alaskan projects, the second of which is now under bid.

Eight companies, six in Canada and two in Newfoundland, probably will dispose of the newsprint cuts of Britain, Australia and New Zealand to regular customers rather than to the spot market.

Waste Paper

After the final collection drive of Saturday, November 16, it was expected that the seasonal weakening of the market would end. Thus there was no disposition to sell below prevailing levels. Old corrugated showed a little weaker, over issue news and white blanks weakened, book stocks declined sharply with the mills loaded. High grades and kraft are in steady demand with prices unchanged.

Waste paper is being exported to Europe to meet their lack of pulp. Brazil and Argentina are seeking to build a large paper industry and require all their own rags and waste paper for production.

Rags

The demand for cotton rags was keen with prices holding and advances expected. Roofing rags are weaker, the felt mills having sufficient supplies for several weeks. Mixed rag collections are more plentiful.

Outlook for the export of rags is poor because of the shortage of dollars and the inability to procure import licenses to bring in needed waste material. The condition will become acute unless there is some change in the world monetary situation.

Prices are expected to remain firm. Supply is tight and demand increasing. Scrap burlap is extremely strong and supplies scarce.

Chemicals

The Harriman Committee's report that Europe will need for recovery large quantities of the chemicals now in short supply in the paper industry added confusion to perplexity, for of those most needed, soda ash and caustic soda are reported increasingly tight for our needs. The Committee concluded that exports of soda ash are so small that a 50% increase would not create difficulty, though the market reported no easing in the domestic tight situation with fifteen percent of the demand unsatisfied. A gleam of hope for 1948 is the promise of a new plant to provide a 70 percent increase in the production of one manufacturer.

The other item, caustic soda is even more of a conundrum. A serious shortage plagues the industry with no sign of betterment. This week's imports included five hundred additional tons from Le Havre, while 4.5 percent of the four billion pounds of caustic produced here in 1947 will be exported to non-European countries, which is one-ninth of the amount needed for Western European recovery.

United States alkali producers expect that both soda ash and caustic will be in tight supply all of next year, that expansion in plant capacity to provide 27% increase in soda ash and 45 percent on caustic soda will not be completed before 1952.

The rosin season closed with prices advancing again. The supply is adequate for the balance of the year. Stock prospects are good with new export buying expected. Foreign production has been disappointing. Portugal and Spain had normal crops but France has made no substantial recovery and will not be able to export for nearly ten years. Thus our exports can be expected to rise when the dollar shortage is relieved. Domestic producing units now in operation are expected to reach a record high in 1948-49.

Index

The index of general business activity for the week ended November 8 inclined to 148.3 from 147.3 in the preceding week, compared with 142.2 for the corresponding week of 1946. Index of paperboard production rose to 182.4 from 174.0 in the preceding week, compared with 172.6 in the corresponding week of 1946.

Paper production for the week ended November 8 is estimated at 110.2 percent, compared with 111.1 for the preceding week, with 106.8 for the corresponding week of 1946, with 97.0 in 1945, and with 96.0 for the corresponding week of 1944.

TYPICAL REPORTS ON NEW ORR-CHEM TREATED FELTS

ORR-CHEM on suction press. Six weeks on vs. only three weeks for untreated felt. No trouble or wash-up stops. Parchment.

ORR-CHEMS ran 42 days—3108 tons—felt cost 7½c per ton. Untreated ran 24 days—1776 tons—felt cost 10½c per ton.

ORR-CHEM making fine papers on super-suction press. Served 11 weeks. Untreated felts averaged only 6 weeks.

ORR-CHEM bottom felt ran 24 days—1864 tons. Untreated felts ran 18 days—1451 tons. No cylinder blowing or filling up of felt. Finish excellent. Boxboard.

Felt costs reduced 22½c per ton with ORR-CHEM top, bottom, and press felts. Using ORR-CHEMS exclusively.

On a machine with two presses, an ORR-CHEM ran 21⅔ days, produced 10,639 tons of Kraft board at a felt cost of 7c per ton.

NOW FOR THE QUESTION: *HAVE YOU TRIED ORR-CHEMS? IF SO, WHAT WAS YOUR EXPERIENCE? IF NOT, WHY NOT?*

THE ORR FELT & BLANKET CO., Piqua, Ohio

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$87.50	to	$90.00
Sheets	$109.00	"	—

Kraft—per cwt.—Carload Quantities
Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.75	to	$2.00
Wh. No. 1 M. G.	1.75	"	2.00
Wh. No. 1½	1.60	"	—
Wh. No. 2	1.55	"	—
Kraft Anti-Tar	1.38½	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$5.50	to	$6.40
Bleached	6.50	"	7.60

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$4.85
Br. Sr M'tif'd 10x12	3.45
Br. Jr. M'tif'd 9½x9¾	2.95
Br. Jr. Sgl. fold 10x10¾	3.10

Manila—per cwt.—C. l. f. a.

No. 1 Jute Tag	$14.50	to	—
Reg. Jute Manila	13.25	"	$15.50
No. 1 Manila	9.75	"	—

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. Lt Chip*	102.50	"	—
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.	100.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items
Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	38.00	34.55	33.10
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.

100% Rag Ext No. 1	$54.25	$50.00	$48.00
100% Rag	$47.50	$43.90	$42.10
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, Assorted Items
Bonds, per cwt.

No. 1	$19.25	$17.50	$17.00
No. 2	18.25	16.50	16.00
No. 4	17.50	16.00	15.25

Ledgers, per cwt.

No. 1	$20.25	$18.35	$17.60
No. 2	19.25	17.50	16.80
No. 4	18.50	16.90	16.10

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$20.40	$19.55
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60

(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	14.15 to 17.90	13.65 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$75.00 to $81.00
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	121.00 " 130.00
Bleached Soda	120.00 " —
Bleached Sulphate	Nominal
Unbleached Sulphate Northern	Nominal
Unbleached Sulphate Southern	Nominal

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Select Unbleached Kraft (no freight allowance)	125.00 " —
Reg. No. 1 Kraft	112.50 " 115.00
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	125.00 " 155.00
Glassine Unbleached Sulphite (no freight allowance)	112.00 " —
Bleached Soda	120.00 " —
Groundwood	75.00 " 85.00
Sideruns Pulping News	75.00 " 80.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Kraft	170.00 to 195.00
Bleached Sulphite	175.00 " 185.00
Unbleached Sulphite	145.000 " 175.00
Unbleached Kraft	140.00 " 165.00

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$175.00 to —
Unbleached Sulphite	145.00 " 150.00
Unbleached Sulphate	140.00 " —

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50 to $12.00
Light Silesias	7.50
Unbleached Muslin	11.50 " 12.00
White Back Blue Overalls	8.50
Blue Overalls	7.75
Unbl. Fancy Shirt	5.00 " 5.50
Light Percales	6.00 " 6.50
Light Prints	5.25 " 5.95
Washables	4.00
Bleachable Khaki	6.00 " 6.50
Unbleachable Khaki	5.50 " 6.00
Cottonades	5.00 " 5.50

Old Domestic Cotton Rags

(F.O.B Shipping Point Plus Dealer's Commission)

	Per 100 lbs
No. 1 Whites Repacked	$4.50
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	2.00
No. 2 Roofing Rags	1.90
No. 3 Jute Bagging	1.80
No. 4 Brussels and hard back carpets	1.80
No. 5A Roofing Rags	1.80

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to —
New Mixed Cuttings	6.50 " —
Light Sielsias	nominal
Light Flannelettes	nominal
New White Cuttings	nominal
Fancy Shirt Cuttings	nominal
Light Prints	nominal
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	3.00 " 3.75
Dark Cottons	2.20 " 2.60
Old Shopperies	2.50 " 3.00
New Shopperies	2.50 " 3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
No. 1 Scrap Bagging	4.75 " 5.00
Foreign Manila Rope	6.00 " 6.75
Domestic Manila Rope	5.75 " 6.50
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	5.50 " 6.00
Mixed Strings	1.75 " 2.50
Mixed Strings, Outthrows	.90 " 1.10

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to 165.00
No. Hard White Envelope Cuts	145.00 " 155.00
No. 1 Hard White Shavings, unruled	145.00 " 155.00
No. 1 Hard White Shavings, ruled	110.00 " 130.00
Soft White Shavings, one cut	145.00 " 155.00
No. 1 Soft White Shavings	135.00 " 145.00
Soft White Shavings, Misc.	125.00 " 135.00
No. 1 Fly Leaf Shavings	45.00 " —
No. 1 Groundwood Fly Leaf Shavings	30.00 " —
No. 1 Heavy Books & Magazines	27.00 " —
Mixed Books	15.00 " 20.00
No. 1 White Ledger	85.00 " 90.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	25.00 " 30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	110.00 " —
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
New Kraft Corrugated Cuttings	85.00 " 90.00
No. 1 Assorted Old Kraft	55.00 " 60.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	45.00 " 50.00
No. 1 News	13.00 " 15.00
No. 1 Mixed Paper	11.00 " 13.00
Box Board Cuttings	12.00 " 14.00
White Blank News	75.00 " 80.00
Overissue News	18.00 " 20.00
Old Corrugated	25.00 " 26.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.28½ to .29½
Fine Polished—Fine India	.31¾ " .36½
Unpolished—Paper Makers	.24 " .25½
Tube Rope	.24¾ " .26½
Wrapping	.30 " .32
Cotton	.55 " .70

(Hard Fiber)

Mex. Sisal	.21 " .31
Manila (Reprocessed)	.28 " .30

(American Hemp)

Polished Hemp	.36¾ " .42
Unpolished	.29¾ " .34

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.11 to .12
New White No. 2	nominal
Light Silesias	.07½ " .08
Black Silesias, soft	.06½ " .07
New Unbleached	.10½ " .11¼
Washable Prints	.06½ " .07
Washable No. 1	.05 " .05½
Blue Overall	.07½ " .08
Cottons—According to grades—	
Washable Shredding	.03½ " .04
Fancy Percales	.06¼ " .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 " .06½
Bleachable Cotton Cuttings	.07 " .07½
Men's Corduroy	.05½ " .06
Ladies' Corduroy	.05 " .05½
Cottonades	.05½ " .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50 to 5.00
Mixed White	4.00 " 4.25
White No. 2—Repacked	3.50 " 3.75
Thirds and Blues—Miscellaneous	2.25 " 2.50
Repacked	2.75 " 3.00
Roofing Stock—Foreign No. 1	nominal
Domestic No. 1	1.85 " 1.90
Domestic No. 2	1.75 " 1.80
Roofing Bagging	1.65 " 1.70
Old Manila Rope	6.25 " 6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—Foreign	nominal
Domestic	4.75 to 5.25
No. 1 Clean Bright Sisal Strings	.04 " .04½
No. 2 Clean Bright Sisal Strings	.03 " .03¼
Sisal Jute	02¾ " .03
Scrap—No. 1	4.25 " 4.75
No. 2	1.75 " 2.00

IT TAKES GOOD ODOR TO GET THE ORDER

Pleasant product odor is your best salesman, bringing not only initial orders, but repeat sales of many paper products. You, too, can utilize odor appeal as a distinct and subtle selling asset, by the discriminating use of Givaudan's aromatics.

Unpleasant residual odors in such items as gummed or casein-coated papers, asphalt-impregnated papers, carbon, waxed or oiled papers, are quickly, easily and economically overcome with Givaudan's deodorants and reodorants.

With its years of experience in industrial aromatics, Givaudan is excellently equipped to solve your odor control probems. In addition to a line of products especially blended for the paper industry, odorants designed to meet your specific needs can be developed in the Givaudan laboratories.

Our technical staff will gladly help you secure the sales advantages of better odor appeal in your paper. Write today for samples and prices.

"BUY WISELY—BUY GIVAUDAN"

Givaudan-Delawanna INC.

Industrial Products Division

330 West 42nd Street, New York 18, N. Y.

BRANCHES: Philadelphia • Los Angeles • Cincinnati • Detroit • Chicago • Seattle • Montreal • Toronto

Wool Tares, heavy	4.75	"	5.00
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	70.00	"	75.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	80.00	"	85.00
Ledger, Colored	67.00	"	70.00
No. 1 Heavy Books & Magazines	24.00	"	26.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	11.00	"	12.00
Box Board Cuttings	10.00	"	11.00
Kraft Corrugated Cuttings	90.00	"	100.00
Old Corrugated	24.00	"	26.00
Overissue News	20.00	"	22.00
No. 1 News	13.00	"	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	to	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	to	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.23	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	to	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07½
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06½
B. V. D. Cuttings	.10½	"	.11½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	to	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	to	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	65.00	"	—
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	17.00	"	19.00
No. 1 Mixed Paper	13.00	"	14.00
Old Corrugated	25.00	"	27.00
Mill Wrappers	22.00	"	—

MARKETS

BLANC FIXE—No change in market. Deliveries fair, and supplies adequate. Pulp is currently quoted at $77.50 per ton in barrels, car lots at works, and $82.50 l.c.l., f.o.b. works.

BLEACHING POWDER—Demand firm. Market continues tight. Shortage of metal containers. Quotations are unchanged. Prices range from $3.50 to $4 per 100 pound drums l.c.l., works.

CASEIN—Prices strong following slump. Speculation reflected in an unhealthy market. Buying slow. Current prices on processed acid precipitated casein are 30 to 33 cents per pound for domestic grades and 29½ to 30 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA—Market tight. No improvement in supply condition. Serious shortage. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 per cwt. in 100 pound drums—car lots at works; liquid 50% in tank cars at $2.25 per cwt.; liquid 73% in tank cars at $2.35 per cwt. at works.

CHINA CLAY — Market steady, domestic grades in good supply. Domestic filled clay is currently $10 to $13 per ton, car lots, coating clay $15 to $30, imported clay from $18 to $35 export warehouse.

CHLORINE — Supply extremely tight. Heavy demand exceeds available supply. Quantities unchanged. Dealers allocating. Currently quoted at $2.25 per cwt. in single unit tank cars, and at $2.55 to $3.75 per cwt. in multi-unit tank cars, f.o.b. works.

ROSIN—Market tight. Strong resistance to advanced prices. Prices firm. Gum rosin in drums per 100 pounds net, in yard, New York car lots, B, D, E, F, $8.50; G, H, I, K, M, N, $10.75; WG, $10.85; WW, $11.05. Wood rosin, per 100 pounds, net, f.o.b., l.c.l., N. Y., B, $6.45; FF, $7.95; G, H, I, K, M, N, $10.58; WG, $10.66; WW, $10.92; X, $11.02.

SALT CAKE—Demand continues stronger than supply with slight improvement in shipments. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26.

SODA ASH — No improvement in supply situation. Heavy demand. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.80.

SODIUM BICARBONATE—Supply good. Reported at $1.85 per cwt. paper bags, carload lots.

STARCH — Prices strong. Market steady and active. Production moving steadily. Export good. Pearl grade quoted at $6.52 per 100 pounds, powdered starch at $6.63 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Supply ample. Prices firm. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $2 per 100 pounds in bags, car lots, at works.

SULPHUR — Demand steady. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC—No improvement seen in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $21 per ton in mines; Canadian at $35 and up per ton. All prices in car lots.

Faith... in the future!

Three Hundred Years ago a pilgrim colony survived a winter of suffering and privation; a little band of men and women who braved a new world, and a man named Bradford said: "Let us give thanks".

Today we look out on our world, and somewhere perhaps a voice, wearied by burdens, whispers: "What have I for which to give thanks".

We here at La Boiteaux have many things for which we are grateful and for which we say "thanks". Handling new and tough problems, new situations, requires practical knowledge, courage and vision. Survival of the early settlers proved the value of experience and know how to see them through.

We are grateful and give thanks for the opportunity of working with those individuals who have faith in the future and in us.

The La Boiteaux Company, Inc.

CINCINNATI, OHIO

EQUIPMENT AND SUPPLY NEWS

Steelweld Line Adds New 500-Ton Press

A new 500 ton press with unusually long bed has been added to the Steelweld Bending Press line manufactured by Cleveland Crane and Engineering Company, Wickliffe, Ohio, to satisfy an increased demand for machines that will handle larger and heavier sheets of metal.

This press, known as a Model Mo6-14, has a 20 foot bed and ram which permits bending steel plate up to 20 feet x ⅜ inch or 14 feet x ½ inch. Twenty-one-inch bed extensions on both ends make possible horning operations. To minimize deflection and assure accuracy, the bed extends 42 inches below the floor.

This is a two-speed machine which can be operated at either 7 or 20 strokes per minute. It is equipped with tonnage indicators on both ends that show the loading to which the machine is subjected. A clutch knock-out mechanism disengages the clutch when the press is overloaded. The back gauge being motor-driven is quickly and easily adjusted to proper position.

The machine shown is operated by a mechanical foot treadle, but air-electric control can be provided enabling the use of an electric foot switch to be slid around the floor in front of the machine to the position most convenient for the press operator. This type control is especially recommended for fast production. Extra wide bed and ram may be had to accommodate large dies, and other features may be incorporated to suit special conditions.

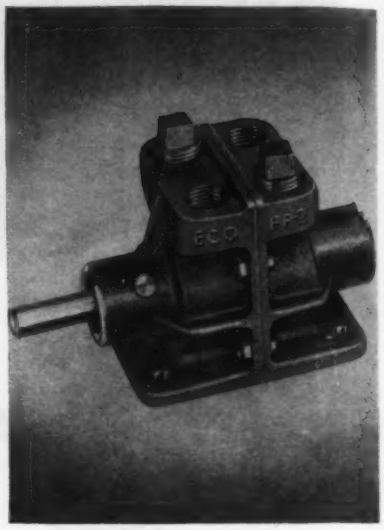
Eco Double-Impeller Gearless Pumps

A new line of gearless pumps for general industrial use, has been developed by Eco Engineering Company, 12 New York Avenue, Newark 1, N. J.

Based on the successful principle of ECO Gearless Pumps in use in the marine field, the newly designed pumps include several special features and improvements which make them ideal for the handling of practically all types of liquids. Chief among the improvements is their new double impeller design which gives a strong flow against pressure. Bodies are available in stainless steel, monel and bronze to meet a wide range of industrial conditions. Impellers are tough and long-lasting, made of special wear-resistant materials, and can be provided to meet the special characteristics of the liquid being handled.

The new line of pumps can be adapted to nearly all types of liquids, including acids, solvents, oils, etcetera, and are available in ¼" and ½" sizes, capacities from one to twelve gallons per minute—varying with pump speeds and pressures. They can be used against pressures to 50 p.s.i., and can be run and deliver at speeds from 200 to 3500 rpm.

Pumps are sturdily built to withstand hard usage. Body should last indefinitely, and wearing parts are easily replaceable. They are versatile to a wide number of operations and, fitted with self-lubricating bearings, eliminate problems of lubrication and give freedom from pump grease or oil fouling intake or discharge lines.



Eco Gearless Double Impeller Pump, ½" Model PP2-1

New Otis Booklet Describes Transport Planning Service

NEW YORK—The Otis Elevator Company has issued a new 12-page booklet describing its free Vertical Transportation engineering and planning service. This literature is available from Otis headquarters at 260 Eleventh Avenue, and the 253 Otis sales and service offices in U. S. cities.

Yocum Joins E. D. Jones & Sons

PITTSFIELD, Mass. — Thurston L. Yocum, 35, of Camas, Washington, has joined E. D. Jones & Sons Company as a sales engineer. He came to the local firm from the Crown Zellerbach Paper Corporation, which he served in numerous technical and engineering capacities at various Pacific Coast communities.

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette	**Wax**	**Photographic**	**Jet Propulsion**
Condenser	**Grease Proof**	**Snap-out Forms**	**Aero-engine Parts**

MEISEL PRESS MFG. CO. **950 Dorchester Ave., Boston**

styles...with a difference

It's easy to smile at the styles of yesterday but out of this original and practical idea have come the smartly functional, free-action sport styles of today. Many industries have been built by the courageous development of such progressive ideas. Niagara's early pioneering in the field of electro-chemicals has led to the tremendous increase in the utility and variety of these materials until today Niagara is "An Essential Part of America's Great Chemical Enterprise."

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

LIQUID CHLORINE • CAUSTIC POTASH • CARBONATE OF POTASH • PARADICHLOROBENZENE • CAUSTIC SODA • NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)

HARRIMAN REPORT

(Continued from page 28)

tion requirements. Assuming, however, a general world betterment in basic raw materials such as coal, improved transportation and industrial rehabilitation in the war-torn countries, coupled with increased production of pulp and paper in North America, it is possible that by 1949 the current tight world situation may be mostly alleviated. In fact by 1949 the United States may be able to materially increase exports of paper and paper products, but not of pulp. For the next few years the United States will require approximately the same volume of pulp imports to maintain the pulp purchasing paper mills in full operation, as well as the rayon and other mills using dissolving pulps, as is being currently imported, namely approximately 2,400,000 tons.

"Any program which would direct Northern European or Canadian pulp away from the United States, or in other words take United States buyers out of a free competitive market, would have the effect of discriminating against some 350 United States paper mills (about half of total United States paper mills) which depend in whole or in substantial part upon purchased market pulp. It would place these mills at a great disadvantage with their competitors since the paper mills integrated with their own pulp would presumably find a stronger market under such conditions and would be able to operate at full capacity against the non-integrated mills' curtailed operations.

"A similar situation would face United States rayon mills and other industries using non-paper grade pulp (known as dissolving pulp) since of total United States consumption of dissolving pulp about 40-50 per cent is imported, principally from Canada but with smaller quantities from Northern Europe.

"The solution to the European shortage of pulp and paper (as well as the Japanese and Chinese situation) does not seem to lie in directing supplies away from existing consumers such as the United States, Mexico, South America, Australia, New Zealand, and the United Kingdom. Instead, it would seem the solution is to take aggressive steps aimed to increase production of pulp in the Northern European countries and to rehabilitate production in continental Europe, particularly Germany.

"It should be noted in passing that an increase in the supply of pulp available for the Eastern Hemisphere resulting from a curtailment of United States imports would by no means save dollars. The diversion, of, say, Scandinavian supplies to the continental countries would have not only a direct impact upon dollar resources of the Scandinavian countries but, indirectly, it might adversely affect dollar resources of other European countries. Moreover, since the maintenance and even expansion of pulp shipments to the United States is one way of increasing the world supply of dollar exchange, it is especially desirable that any increase in supplies for Europe be accomplished through an increase in present production.

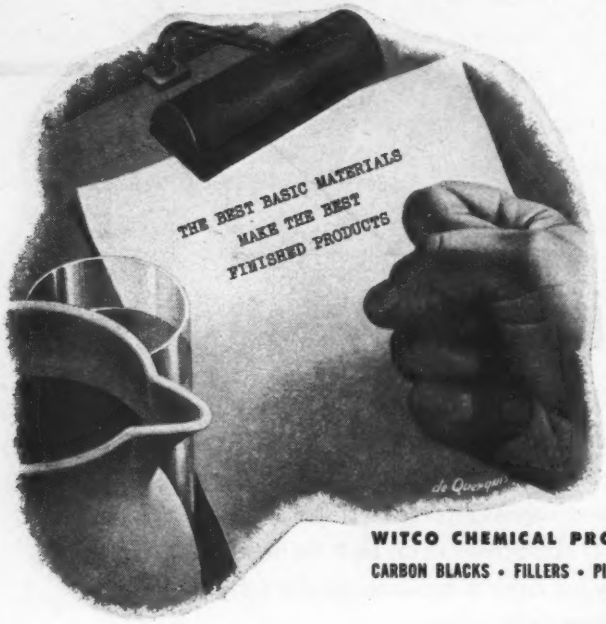
"A further interesting observation with respect to dollar exchange is that United States imports of papermaking raw materials (pulpwood, wood pulp, rags) and paper (principally newsprint) are far larger in value than any other commodity imported into this country. Estimated value of the 1947 imports of these papermaking raw materials, paper and paper products is $476,160,000."

Rodney Hunt Rebuilds Wornout Rolls

Where the body surfaces of industrial rolls undergo a continual wearing away, they can be salvaged by the Rodney Hunt recovery process at a considerable saving over the cost of new rolls.

Not only rubber-covered rolls but many surfaced with bronze, brass, stainless steel or iron will become worn or badly pitted and scarred. In all such cases they can be reconverted to stainless steel jacketed roll.

In the roll, the rubber jacket was replaced with one of stainless steel, and a stainless steel splash flange and steel hub supplied by the Industrial Roll Division of Rodney Hunt Machine Company of Orange, Mass.



A quality product *is* one from start to finish. This means that quality begins with fine basic materials . . . such as the materials which Witco has developed through research and production control to add something of fundamental importance to the character of the products in which they are used.

Prepare to meet the challenge of the competitive days ahead. Look over the list of Witco products below and investigate those in which you are interested. We will be glad to send literature and free samples.

WITCO CHEMICAL PRODUCTS FOR THE PAPER INDUSTRY

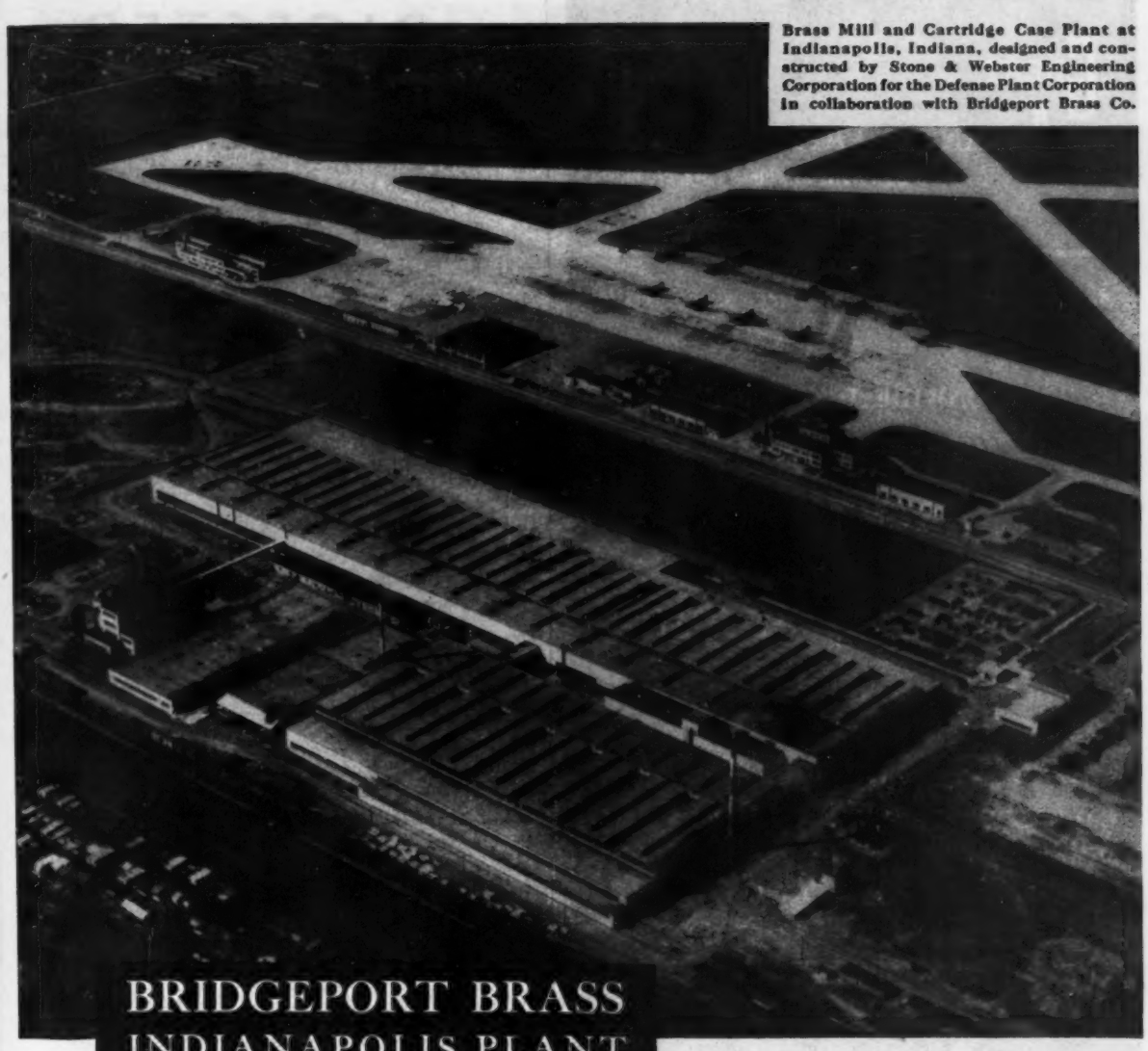
CARBON BLACKS • FILLERS • PIGMENTS • BLANC FIXE • ASPHALTS • EMULSOBLAK

WITCO CHEMICAL COMPANY

MANUFACTURERS AND EXPORTERS

295 MADISON AVENUE • NEW YORK 17, NEW YORK

BOSTON • CHICAGO • DETROIT • CLEVELAND • AKRON • LOS ANGELES
SAN FRANCISCO • LONDON AND MANCHESTER, ENGLAND



Brass Mill and Cartridge Case Plant at Indianapolis, Indiana, designed and constructed by Stone & Webster Engineering Corporation for the Defense Plant Corporation in collaboration with Bridgeport Brass Co.

BRIDGEPORT BRASS
INDIANAPOLIS PLANT

IN designing and constructing the Brass Mill and Cartridge Case Plant at Indianapolis, Stone & Webster Engineering Corporation collaborated with Bridgeport Brass Company engineers . . . Provision had to be made for the immediate and variable needs of wartime production . . . During the war it proved to be one of the lowest cost producers of cartridge brass in the country.

Today this efficient plant is again in operation as Bridgeport's mid-western brass mill. The shifting demands of peacetime production were met with a minimum of changes. It stands as an example of sound engineering . . . planned for future needs.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER INC.

GREAT ATLANTIC PAPER CO. Inc.
10 East 43rd St., New York 17, N. Y.
Telephone: MUrray Hill 2-7830

Serving the Paper Industry since 1896

NATIONWIDE DISTRIBUTORS
MILL AGENTS AND CONVERTERS

PRINTING
and
WRAPPING PAPERS

BOOK • BOND • WRITING
NEWSPRINT

ROTO • MAGAZINE PRINTING • INDEX
COATED • POSTER • BRISTOL
MIMEOGRAPH • MANIFOLD • OFFSET
WRAPPING • LEDGER • TABLET • KRAFT
GROUNDWOOD • TAG • TISSUE
M.G. • ENVELOPE

ATTENTION
PAPER MILLS

We invite contacts with mills seeking dependable and reliable sales service.

Make Great Atlantic in New York your Eastern Sales Headquarters.

DIGESTED

The greatest expansion and modernization program since the balmy days of 1929 is now underway throughout the nation's newspaper and printing industry as harassed publishers turn to the methods of mass production industry to offset rising costs. More than $170,000,000 alone is being spent this year on new printing equipment.—WILLIAM L. BATT, President of SKF Industries,

The Portal-to-Portal Act:

Leaves unaffected what has been known under the Wage and Hour Law as the "workday"—the period from "whistle to whistle"—and what has been known as "hours worked" within that period.

Differentiates between an employee's "principal" activity, or activities, and those performed "preliminary" or "postliminary" to his "workday."

Does not affect an employer's liability to pay an employee for his "principal" activity, or activities.

Relieves employers of liability only as to those "preliminary" or "postliminary" activities outside the "workday" for which payment is not provided by "contract, custom or practice."—WM. R. MCCOMB, Administrator, Wage and Hour Division, U. S. Department of Labor.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Corresponding Weeks—1946		Current Weeks—1947	
October 5	107.2	October 4	109.5
October 12	105.9	October 11	108.4
October 19	105.1	October 18	108.3
October 26	106.8	October 25	110.2
November 2	107.2	November 1	111.1
November 9	106.8	November 8	*110.2*

COMPARATIVE MONTHLY SUMMARIES

1946				1947			
Jan.	94.7	July	94.0	Jan.	102.1	June	106.0
Feb.	98.4	Aug.	104.7	Feb.	105.9	July	93.5
Mar.	104.4	Sep.	101.3	Mar.	106.1	Aug.	104.2
Apr.	102.7	Oct.	106.4	Apr.	105.1	Sep.	102.0
May	100.7	Nov.	105.5	May	106.2	Oct.	*109.5*
June	104.6	Dec.	97.0				
		Year Avg.	101.1				

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.1	96.6	91.9	88.4	88.5	89.3	101.3	*104.2*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Corresponding Weeks—1946		Current Weeks—1947	
October 5	100	October 4	100
October 12	99	October 11	102
October 19	98	October 18	101
October 26	101	October 25	101
November 2	100	November 1	100
November 9	102	November 8	*102*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	101	90	99	96	*101*			

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Swedish Pulp

Many are the pitfalls of the headline writer; it is so easy to over-emphasize the value of a single phase of news, and thereby to create an inaccurate view of the whole news story. Witness the recent headline which suggested an almost immediate sag in pulp prices because Sweden, in its need for dollar exchange, had decreed that less of its pulp should go to other countries so that more might be shipped to these shores.

It is reported that this will mean that about 200,000 tons more woodpulp will be going to the United States next year. This will be a significant gain in Swedish exports to the United States as that country had already shipped 435,536 tons of pulp to United States ports this year, and would indicate a possible export to that country of 600,000 tons next year. Canada exported to the United States 1.1 million tons of woodpulp in the first nine months of the year.

The question being asked is, will this break the back of the current sellers' market in woodpulp? Some have seen some possibility that it may do just that. It would appear, according to some paper interests here, that if Swedish woodpulp exports to the U. S. are increased another fifty per cent, the U. S. woodpulp buyers will be in a position where they will once again be able to "negotiate" about prices.

It is pointed out, however, that in the event of Swedish woodpulp affecting the prices on the U. S. market, that country's prices would be the first to tumble. The Swedish woodpulp has consistently sold at from $25 to $35 a ton more than the Canadian and U. S. prices.

Unwritten Record

Though the implication in plans promulgated by Premier Drew of Ontario as his policy to reduce progressively the amount of pulpwood that may be exported from his province carry a definite threat to the operations of substantial enterprises on this side of the international border, there is a strong undercurrent of belief that some modification may yet be found possible. Between the two neighboring nations a tradition of free exchange has grown to be so generally accepted that occasional eruptions of local policy have come to be regarded as expression of dissent with regional policies. This record, unwritten as it is, has made many confident that eventually a way will be found to avoid the severe interruption of operations that such an action would cause.

It comes then, as a new point of view to find that some interests in Ontario are reported as quite as apprehensive as are the Wisconsin mills whose future supply is threatened with vanishing. A publicist north of the border even has dusted off some ancient history and produced a tale of direct negotiations that is chiefly interesting at this moment because it so clearly shows the interrelation of one part of the world on another.

A similar threat was made some years ago, as the story goes, and it started a chain of events that, as they trailed off into nothingness carried the original proposal with them. United States interests at that time immediately denounced this economic nationalism and brought pressure on Washington. They pointed out that Ontario was quite within their powers in stopping export of pulp logs. They added grimly Washington should, however, call Canada's attention to the fact the United States also exports unfinished material like steel and coal.

Washington quietly suggested to Ottawa there might be an overwhelming demand in the United States for retaliatory action by stopping the export of coal, unfinished steel and other great essentials to the Canadian and Ontario economy.

Ottawa passed this word along to Ontario and there was no enforcement of restrictions on the export of pulpwood from Ontario.

Ottawa according to the view of the man in the street, expects any day to get a similar quiet message from Washington about the Drew edict, and wonders whether Premier Drew will risk insisting on carrying out his plan.

Highest Authority

Lest there be any doubt about the sizeable importance of the pulp and paper industry to some phases of the nation's economy, a paragraph in the Harriman report partially printed elsewhere in these pages deserves to be read again—and then again. This is apropos of a remark recently passed that some one had it on highest authority that some indefinitely impressive amount of pulp and paper is to be set aside as one of the commodities destined to help Europe recover its normal balance again. Actually it would appear that the industry can make even more substantial contribution if it be left to its own devices. United States imports of paper making materials and paper are far larger in value, says the report, than any other commodity imported into this country. The effect of this trade as a contributor to the foreign need for dollar exchange should be self-evident.

Estimating that the total value of this business during 1947 will reach $476 million the report emphasizes that that this must be considered as a part of the dollar exchange picture. Gifts and loans may help restore a people; dollar exchange is of immediate value.

W. L. Cook

Editor

Rule 1

for coating formulas

CONSIDER CALGON*

For starch or casein pigmented coatings, your formula should include Calgon, for Calgon has pronounced deflocculating properties on such materials as clay, calcium carbonate, titanium oxide and other pigments and fillers, and also exerts a dispersive action on starch and casein.

As a result, the addition of a small percentage of Calgon gives a coating which is smoother, more uniform, and more firmly bonded to the paper. With Calgon, a larger proportion of solids may be used in the coating mixture, thus facilitating the drying operation. In casein coatings, less casein is required.

Calgon has many other applications in the pulp and paper industry, in addition to its use in coatings. We will be glad to send you detailed accounts of these applications and of the properties of Calgon. Ask for "Calgon Applications in the Pulp and Paper Industry."

*T. M. Reg. U.S. Pat. Off.

PITTSBURGH
HALL
BIROMIN
CALGON

calgon, inc.

A SUBSIDIARY OF
HAGAN CORPORATION

HAGAN BUILDING
PITTSBURGH 30, PA.

SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. *Edited By* R. G. MACDONALD, *Secretary*

The Description and Specification of Color*

By Ralph M. Evans[1]

Abstract

After a brief description of the way in which seeing an object color involves an object, an illuminant, and an observer, it is shown what form specific problems take when considered in this manner. Two types of problems are considered in some detail to show these differing forms. The paper concludes with a summary of the three basic types of colorimetry.

Color has been an important element in American business for many years and there is every evidence that it is becoming more and more important rather than less. In spite of its great importance, however, workers who have to deal with color find themselves hampered by the difficulties of describing colors and of stating what they want in terms which can be understood and yet which are sufficiently rigid to stand the test of legal application when this becomes necessary.

A great many systems of color description and specification have been devised but in many cases these have seemed to confuse the issue rather than to clarify it. That this has been so is due in large part to a misunderstanding of the problems involved and to the attempt to apply color systems to problems beyond their scope.

The papers in this series today have been written in the hope of clearing up some of the misunderstandings. In order to introduce them the author should like to try to outline both the general problem of color description and specification and the more definite one of how to approach the solution of specific problems. This will involve a brief description of the nature of color, a discussion of color systems and their place in the scheme of things, and consideration of the problem of exact statement of manufacturing tolerances. The assumption that color is simple is the underlying cause of much of the confusion.

Suppose one has a colored object. Such an object appears colored to the eye because when light falls on its surface some of the light is absorbed and some of it is reflected.

The exact mechanism is something as follows. Light consists of energy travelling through space at high velocity. This energy is in the form of high frequency transverse vibrations identical with radio waves except that the vibrations are of much higher frequency. Any given beam of light may be thought of as a mixture of an infinite variety of these frequencies as far as the wavelength is concerned but with the relative amounts of energy at the different wavelengths constant for that light source.

The easiest way to understand this situation is from a plot which shows the relative amounts of energy in the different wavelength regions over the range for which the eye is sensitive.

Such a plot should be thought of as a picture of the light. It tells exactly how much light there is in any one group of wavelengths compared to any other.

Now when light falls on a colored surface some is absorbed and some reflected and what is seen is the reflected light. This absorption and reflection, however, is different in amount for the different frequencies of the light. The net result is that the curve which describes the light leaving the object has a different shape from the one for the light source itself. It is possible by means of instruments known as spectrophotometers to measure the extent to which the various wavelengths are reflected or transmitted and so get a picture, so to speak, of the action of that surface on light. Such a picture is called a spectrophotometric curve.

For a green surface it would show that it had a relatively high reflectance for light in the middle range of the visible wavelengths and relatively little for those which are shorter or longer. The important thing about such a curve is the fact that it describes the surface and not the light which leaves it. The values read tell what *percentage* of light is reflected at each wavelength. If there is a lot of energy at that wavelength in the light, there will generally be a lot in the reflected light; but if there is none in the light then there will be none reflected no matter how high the percent reflectance may be.

These two curves, then—one of the illuminant, the other of the surface—give some little picture of what is going on when light falls on a colored object. The energy distribution of the light source is changed by the absorption of some wavelengths more than others.

As to the question of why the eye sees such a change as a change in color, perhaps the easiest way to visualize this is by means of a somewhat fantastic analogy. Imagine that the eye is made up of millions of sets of tiny photoelectric cells, each of these sets consisting of one cell sensitive to short wavelengths, one sensitive primarily to the middle range and one primarily to the longer range.

Now imagine that every cell sensitive to the shorter wavelength is connected to a blue light, each one sensi-

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24-27, 1947.

[1] Eastman Kodak Co., Rochester, N. Y.

tive to the middle range lights a green light and the other lights a red one. The intensity with which each of these lights shines depends on the total amount of light falling on its own photocell. Very long or very short wavelengths will not light the green light at all but will light the red or the blue respectively. White light falling on the photocells would light all three of the lamps to again produce white light. On the other hand there could be considerable variation in the quality of the light falling on the cells without changing the relative intensity of the lamps which they light. The final color produced by these little brain lights, of course, depends only on the relative intensities of the three.

The author has introduced this little picture of how the eye works to illustrate two points. The first point which it illustrates is this. The eye does not see directly the energy distribution of light. It sees only the relative effectiveness of the light on its own receptor system. Any energy distribution which affects the receptors in the same ratio will be seen as the same color. This fact has very important consequences and shall be considered later.

The second point is that in any color problem the way the eye acts is just as important an element as are the quality of the illumination and the nature of the colored surface.

These three concepts illustrate the fact that color is *necessarily* complex. In *any* color problem it is necessary to consider the nature of the illuminant, the nature of the colored object, and the relationship of these to the way the eye acts before the problem can be solved. It is only by holding many conditions constant that any part of a problem may be made simple and it must be kept in mind that the results apply only to those conditions. This is not alarming. Any particular problem can be solved rather simply but the author should like to insist on the fact that the problem *as a whole* must be seen first before a specific solution is attempted.

Selection of Color

Begin, then, by assuming that a manufacturer has a problem. His styling expert, or his engineer, or somebody has decided that a new item should have a certain color. A model has been made and with some difficulty has been colored the exact color that is wanted. From this time on all of these articles are to be of this color. The manufacturer will want to buy paint, or dyes, or enamels or what not to color these articles. How can he describe what he wants so that his product will remain constant and every one will match every other one?

Remember that the problem must be approached broadly. The illuminant, the object, and the eye are equally important. How do they enter this apparently simple problem? Take the three in order, starting with the illuminant. The question must be asked, "How many kinds of illuminant will the product encounter under which it is necessary that it have a certain color?" The number of illuminants under which a given object may be seen today is very large. There are all kinds of daylight from clear blue sky light through overcast days to clear sunlight with no sky. There are incandescent lights from the faintly yellowish high intensity photoflood lamps on through to the decidedly yellow bulbs and shades which most people have in their homes. In addition there are a considerable variety of fluorescent lamps of various makes and such peculiar ones as sodium street lights and the variety of sign lamps usually lumped together under the name of neon lamps. In how many of these illuminants is it necessary that the product have a specific color?

It might as well be stated flatly at this point that a complete solution of this problem at the present time is not possible. A paint cannot be designed which will have exactly the same color under all illuminants, nor can one be designed which will meet arbitrary specifications in this regard. However, there are two things which can be done. A paint can be found which is satisfactory under all of them and then standards set up which will duplicate it and the paint can be modified to some extent to improve its appearance in a particular case. All of this costs money, however, and requires careful thought to see whether or not it is necessary.

Suppose the object is a ladies handbag in dyed leather. It is not very important that such an object be exactly the same color under all lights nor for any two of them to be exactly the same. Obviously, here the problem is that at the point of sale, under one illuminant, the color be that which the color stylist for the product considers has greatest sales appeal. At its simplest the problem may reduce to meeting the requirement that it have a certain color under tungsten lamps.

Suppose, however, the product under consideration has to match exactly the product of another manufacturer and this match has to persist under all possible conditions. Such a case might be encountered in any product. Trimming used on a suit which must match the cloth, for example, or a part for a camera, wheels on an automobile or almost any thing where the requirement is set under all conditions the several parts must exactly match, all fall in this category.

A little thought will show that these two extreme examples are miles apart as far as the problem of color specification is concerned. In the example of the handbag one is concerned with the approximate color seen by the customer at the point of sale. In the latter case one is not concerned with the color at all but with the question of whether or not two colors appear to match. These are description and specification problems and the author should like to devote the rest of the paper to pointing out the difference between the two and indicating broadly how the problems involved may be solved to any desired degree of approximation.

The case of the handbag under a single illumination is the easier of the two cases, but suppose that the manufacturer is quite insistent that the exact color selected will be reproduced by all the bags which he makes. Obviously the chief problem here is one of color, color as seen by the customer. The problem, however, has two main aspects. These are, first, the problem of describing the color, perhaps to the manufacturer of the leather, and second, the problem of specifying how far from this color any given sample may be and still be acceptable. These are separate problems and they may have separate answers, but the answer to the latter always includes that to the former, even if in less desirable form.

In the present case the manufacturer would probably proceed somewhat as follows. First he has his factory make up a considerable number of handbags that are almost but not quite the same color as the one actually chosen. He then has his experts study these and decide just how far off the color may be in various directions without serious consequences to his sales or his conscience. Next he makes up samples of leather which exactly represent those extremes beyond which he will not go and distributes

them to the people in his company who will have the power of refusing to accept shipments of the dyed material. He is now in a position to know exactly where he stands and it is believed that to many people it would appear unnecessary to go further. However, this is not so, even for this simple case. Remember that if the manufacturer does a large business he may want to turn down a large shipment and that a great deal of money and perhaps a lawsuit may be involved. The manufacturer must be sure of his limits.

Three things are wrong with these limits and any one can cause trouble.

First, they do not represent an infinite number of samples. Intermediate boundaries can cause dispute.

Second, the colors involved will not look alike to all observers and some colorants which appear to fall inside the limits to one observer may fall outside for others.

Third, the manufacturer has no good way of knowing or proving that the standards will remain constant from the time they are set up until the dispute arises.

In addition, of course, there are inconveniences involved such as inability to describe accurately the color itself and the like.

Now all of these difficulties can be avoided by two simple steps provided one is aware of the possibilities It will be recalled that this manufacturer is interested in only one illuminant. Accordingly, he is concerned not with the nature of the way the material absorbs light but with what the eye sees when it looks at the bag.

Any other color which *looks* the same under that illuminant *is* the same as far as he is concerned. Accordingly, he can proceed directly with the comparison of his matching limits to the colors of some standardized system of color. This may be any convenient system which looks as nearly as possible like the material with which he is dealing. If the leather has a high gloss it may be that the chips of the Color Harmony Manual of the Container Corporation have most nearly the same appearance. If the leather has a matte surface, it is likely the Munsell Book of Color will be most convenient. In any case, by stating his tolerances in terms of such a color system he does away with items one and three, the color is bounded as soon as the limits are stated in the variables of such a system and their permanence is attested by the sponsors of the system.

In addition he will have acquired a description of the color which is direct and unambiguous, especially if the reference is to the Munsell system.

He would not, however, have protected himself completely against the possibility stated in the second item. That is, he still would be open to dispute on the grounds that the samples matched for one observer but did not for another. He would be particularly open to this possibility if all of his matching had been done by one man.

This difficulty can be overcome too by calculating his tolerances with respect to a standard observer rather than depending on the vision of one man or of one group of men. Standardized techniques for doing this are available in the ICI system of Colorimetry, and these techniques make use only of physical measurements and known information about human vision.

The manufacturer now has everything that he needs, a color, working limits, descriptions of the color and the limits, and stable definite standards for decision independent of his own observers. He can manufacture his handbags without loss of sleep as far as the color is concerned.

Now it has been stated that this was a simple case and it is. Only one illuminant is involved and only one color needs to be considered. The author should like to go on to a more complex case, but it may be advisable to be more specific about these color systems which have been mentioned.

Color Systems

There are two basically different ways of approaching the definition of a color. One can look at the color and say that to him it looks exactly like another color or one can take it all apart physically, find out what makes it tick and then say that all colors that tick exactly the same way are like it by definition. The first corresponds to the material standard systems, the latter to the ICI System. The one which is appropriate is determined by the case at hand.

In the material standard systems of which only two have been mentioned but of which there are very many, color is arranged according to some scheme of things which seems particularly reasonable to the group sponsoring that system. Color itself, considered as a psychological phenomenon, has three main characteristics which may be described as hue, saturation, and brightness or lightness. Hue is the attribute by which the color is chiefly named such as red, green, blue, etc. Saturation is the relative quantity of this hue which is present in the sample, and brightness or lightness describes the total amount of light which the sample sends to your eye. These are the three basic visual attributes of color.

The various systems which have been evolved arrange these attributes in various ways to produce systems which have one advantage or another for a specific purpose. All of them have in common, however, the fact that they end up with a collection of material standards to which names or symbols are attached. The use of such name or symbol with reference to a particular color means that under the conditions of observation and for the observer specified the unknown *matched* the standard sample. These, then, are the material standard systems. What is the other one, known as the ICI System? Without the details it is something like this.

In 1931 a group of scientists met and agreed that they would accept as standard the best data on eye characteristics which had been produced up to that time. They also agreed that they would accept certail light sources as standard whose energy distributions with wavelength they specified with great precision.

With these two agreements made, signed, and ratified, they were then in a position to say that if anyone would give them the reflectance curve describing the way a sample of material reflected light that they would undertake to supply three numbers which would completely specify that sample in a given illuminant for their standard observer. Furthermore, they could state that if any two samples, no matter what their reflectance curves, came out with the same numbers, this *standard observer* would see them as exactly the same under the given illuminant.

This is the ICI System. It deals not with colors but with numbers, but it solves the otherwise insoluble problem of specifying a color without having to take into account the local observer who may be color blind or anomalous or just plain biased.

One could say that there are two approaches to color which could be called color comparison and

color calculation. In any case, with this all too brief summary the author will point out for a much more complex case just how each type fits in and hope that the subsequent papers will straighten out the details.

Matching of Colors

In the first example a mythical handbag maker addicted to artificial light and high precision was considered. The next example is a not so mythical manufacturer who desires that various parts of an article appear of the same color when they are assembled at the central plant. Furthermore he desires that the match be fairly accurate and that it hold under all normal conditions of illumination.

Note that one no longer can consider that anything is constant in the viewing conditions and that all variables must be considered. A complete, high precision solution of this problem, of course, involves absolute identity of the absorption or reflectance characteristics of the surfaces involved. Such an identity, however, is exceedingly expensive to attain, even if physically possible, so that tolerances must be set and the problem in general handled as though this were not the theoretical requirement. How does this manufacturer proceed? First he has to decide how different the parts may be, and this he can do by making up samples and trying them, as before. For this he can probably use samples that differ as little as possible physically, that is, he can paint them with paints made out of the same pigments, etc.

Having established the limits under one illuminant, this manufacturer then has the problem of checking these limits under illuminants which cover the range expected in practice and of trying his tolerance samples in pairs showing maximum differences under each of these conditions. The net result of this series of tests, of course, will be to narrow down the tolerances if they are changed at all.

At this point, however, he has to stop and consider what he has done rather carefully. Note that he has used spectrally similar paints for his tolerance standards. Now in theory at least and to some extent in practise it is possible to match these standards by paints which are distinctly different in composition. While such a mixture may be made to fall well within the limits for one of the illuminants, it does not follow that it will do so for all of them. Furthermore, the direction of the failures under the other illuminants will in general be different than are shown by his working standards. In order to have working samples of all these possibilities he would have to make up a tremendous number of samples and ultimately would find it not worth the expense. What he has to do is set up color tolerances for each illuminant which are independent of the particular paint he has used.

Accordingly, he has recourse again to some standardized system of colors. This time, however, he must state that his color falls within certain limits in this system *as seen under each* of the illuminants, the limits in general being different for each illuminant. He now has described the color changes which he will permit but again he is open to arguments on the ground that different observers will see them differently. This he can avoid by now setting up his tolerances in terms of the ICI System and stating that the *calculated* results must fall within certain limits under each illuminant in order for a sample to be satisfactory.

He has now taken into account the variety of illuminants which he expects the product to encounter, and the fact that there are many physical energy distributions which will match his tolerances, and has eliminated the immediate observer by reference to a calculated system rather than one calling for visual matching.

In taking this last step, however, the manufacturer must again consider just what these tolerances mean in terms of what the general public will see. This again introduces the differences between individual observers. Since in general two observers are not likely to have identical color vision and neither are likely to be the same as the standard observer, it is not correct to assume that all possible energy distributions which fall inside the ICI tolerances will be seen by all people as inside the color gamut described by the material standards. This was the reason for using the ICI in the first place. This being so, if the manufacturer wants the match to apply for a high percentage of people, he must narrow down his tolerances. How far he goes with this will probably be determined by economic rather than colorimetric considerations. In the final analysis, if he is so fussy that he wants the match to hold under all illuminants and for all people, he must specify the actual spectrophotometric curve for the surface. This is the equivalent of specifying the actual pigment or dye used and in many cases also specifies the method of manufacture of the pigment or dye.

These two problems, then, illustrate the extremes of color specification. On the one hand a definite color is specified for a given set of conditions and on the other the permissible color differences between two samples are specified for all conditions. It has been seen how each may be solved to the desired degree of approximation. In concentrating on the problems, however, the fundamental difference of approach involved in the uses of the two types of color specification systems may have become obscured. In conclusion, the differences are summarized briefly.

Suppose one has a patch of colored material of any kind and wants to describe it in such a way that another patch like it may be made from the description. Considered broadly there are three points of view that may be taken with regard to the problem. The first point of view considers only the color of the object as seen by an observer and attempts to describe the color in terms of what he sees with relatively little regard for the underlying causes. The second point of view starts with the causes in terms of the nature of the light reaching the observer's eyes and attempts to evaluate this light according to the known average characteristics of human eyes. The third point of view considers only the physics of the light source and object and attempts to reproduce the exact energy distribution of the light without regard to any observer. The three approaches can be called psychological, psychophysical, and physical, if desired, to emphasize their differences. In the present paper the author has been naming them from the standpoint of the matching system involved so that they come out material standard systems, calculated color systems, and spectrophotometry, respectively.

It is difficult to generalize on the differing results which are achieved by these three approaches. Each has a definite place and each does something that the other does not. On the other hand it is possible by means of known data to express the results obtained by any of the three in terms of either of the first two, or of either of the first two in terms of each other. This tends to obscure the differences by giving them the appearance of being identical.

When a description starts from the statement that two colors appear to match, this statement will hold in general only for the particular observer or observers and only for the illumination conditions used. When it starts from physics and calculates color by way of known average eye properties, the result is independent of any particular observer but depends on the particular conditions under which the physical measurements have been made. The same statements, of course, hold for spectrophotometry. These results are independent of the observer but still dependent on the conditions of measurement.

The real differences become apparent only when one considers the nature of the boundaries around a color which must be set up to define acceptance tolerances. In spectrophotometry only one energy distribution type can be specified. It accordingly excludes all but one of the very large number of possible distributions which will look just alike to an observer. Material standards do better in this respect since tolerances are stated in terms of the match itself without regard to energy distributions. The proof of the existence of a match in any particular case, however, must necessarily rest on an actual test by an actual observer and his skill and the characteristics of his eyes are necessary parts of the proof. In a true borderline case between spectrally very different samples not many people will be found to agree. This is a bad situation in a law court. The ICI System, on the other hand, does not specify color at all in this sense. It specifies a calculation technique by which all colors that would look alike to a particular psychophysically standardized observer calculate to the same three numbers. Anyone can perform the calculations on the data and come out with the same answers. This does not mean that all the colors so calculated will look alike to all observers any more than it did in the other case. What it does mean is that if the contract says that the calculated numbers are the specification there can be no argument about it since the numbers will look alike to everyone.

Titration Methods

Interscience Publishers have just issued "Volumetric Analysis Vo. II, Titration Methods-Acid-Base, Precipitation, and Complex-Formation Reactions," by I. M. Kolthoff, Professor of Analytical Chemistry, University of Minnesota, and V. A. Stenger, Analytical Research Chemist, The Dow Chemical Company, Midland, Mich. (374 pp. 6 x 9¼) (Second Revised Edition).

This book is based on a German monograph published by Dr. Kolthoff in 1928. The present volume has brought the subject of volumetric determination of inorganic and organic substances up to date.

Among the subjects covered are: Calibration and use of volumetric apparatus, including calibration; Practical principles of volumetric analysis, including the preparation of standard solutions; Acidimetry and Alkalimetry, including indicators; Acid-base reactions and displacement titrations; Titrations involving hydrolytic precipitation on complex formation; Argentometric titrations and other precipitation methods; Mercurimetry and the formation of slightly dissociated or complex compounds. An index to standard substances is included.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd St., New York, 17, N. Y.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Donald J. Blazer, Assistant Plant Engineer, Falls Paper & Power Co., Oconto Falls, Wisconsin, a 1939 graduate of the University of Wisconsin.

Travis Q. Holden, Chemist, Howard Paper Mills, Inc., Maxwell Paper Co. Division, Franklin, Ohio, a 1947 graduate of the University of Cincinnati.

Kuei Fen Hsuan, Trainee, Cellulose Factory, National Bureau of Industrial Research, Nanking, China, a 1935 graduate of Hopei Institute of Technology, Tientsin, China.

John Knaggs, Chief Chemist, Portals Limited, Laverstoke Mills, Whitchurch, Hants, England, a 1914 graduate of the Royal College of Science, London, with a Ph.D. degree.

Sigmund Landsman, Engineer, West Virginia Pulp & Paper Co., New York City, a 1909 graduate of Columbia University.

William A. Mueller, Research Chemist, Buckeye Cotton Oil Co., Memphis, Tennessee, a 1938 graduate of the University of Wisconsin with a Ph. D. degree.

James Sandoe, Order Librarian, University of Colorado, Boulder, Colorado, a 1937 graduate of the University of Illinois with a Ph. D. degree.

Victor M. Vidal, Tour Foreman, Cia. Industrial de Atenquique, S. A., Atenquique, Jalisco, Mexico, a 1945 graduate of Universidad Nacional de Mexico.

Albert V. Grundy, Chief, Container Research and Development Division, Quartermaster Food & Container Institute—Armed Forces, Chicago, Illinois. Attended Liverpool University.

Ervin F. Kurth, Professor, Oregon State College, Corvallis, Oregon, a 1927 graduate of the University of Wisconsin with a Ph.D. degree.

Robert J. Lapp, Junior Engineer, The Mead Corporation, Chillicothe, Ohio, a 1945 graduate of the Ohio State University.

Wendell W. Moyer, Director of Research, Central Technical Dept., Crown Zellerbach Corp., Camas, Washington, a 1929 graduate of the University of Illinois with a Ph.D. degree.

Edgar F. Smith, Development Engineer, Polamold Research Laboratories, Inc., Springfield, Ohio. Attended Miami University.

William P. Newman, Jr., Chief Chemist, Southern Advance Bag & Paper Co., Inc., Hodge, Louisiana, a 1937 graduate of the University of Maine with an M.S. degree.

Stanley S. Ross, Secretary, Ross Paper Machinery Corp., Newark, New Jersey. Atetnded Washingon and Lee University.

Richard W. Brown, Student, The Institute of Paper Chemistry, Appleton, Wisconsin, a 1942 graduate of Haverford College.

Ducie C. Chads, Chemical Engineer, Puget Sound Pulp and Timber Co., Bellingham, Washington, a 1940 graduate of the University of Kansas with an M. Sc. degree.

Thure C. Duvall, Manager, Development Department, Wood Conversion Co., Cloquet, Minnesota, a 1933 graduate of the University of Minnesota.

Anthony L. Ensink, Research Engineer, Davidson Manufacturing Corp., Chicago, Illinois. Attended New York University.

Studies of Rosin Sizing

II The Effect of Alumina on Rosin Sizing*

By D. Price[1]

Abstract

The test results obtained on handsheets demonstrated that alumina, as it occurs in papermaking, was detrimental to sizing. Its presence lowered sizing test values obtained by the news ink test a great deal although the fluorescence size test times were very little altered. The use of acid to neutralize the alkalinity of hard waters repressed the formation of alumina; this must explain, in part, the sizing improvement obtained. The use of sodium aluminate in such a manner as to form alumina was detrimental to sizing. The presence of excess alum in the system before size addition, however, decreased the sizing to a much greater extent than did an equivalent amount of alumina floc.

Many contradicting opinions exist at the present time both in the theory and in the practice of papermaking. One unanswered question of importance in this field concerns the roles of alumina [$Al(OH)_3$], and of the aluminum ion (Al^{+++}) in the formation and performance of an effective rosin size precipitate. In the work reported here, the first step toward a solution of this problem consisted of developing a method of analyzing the size precipitate for alumina. With such an analytical tool it was then possible to determine whether alumina, as such, is a necessary component of the size precipitate, if it occurs during some sizing operations, and under what conditions it appears.

A previous paper *(1)* describes the development of an analytical method for determining alumina in rosin size precipitates, and its application to show that alumina is not a part of a standardized size precipitate**. In other words, it was found that it is the aluminum ion rather than alumina which is a necessary constituent of an effective rosin size precipitate. However, in practice, alumina is frequently precipitated with the rosin size. This occurs whenever alkali is introduced into the system by the pulp, by the water, or by other materials. When the papermaking system containing rosin size was alumed to pH 4.5, any excess alkali present was quantitatively converted to alumina which then coprecipitated with the normal size precipitate.

The method for determination of alumina used for this work consisted essentially of a titration of fresh wet floc with dilute standard acid. Figure 1 shows typical potentiometric curves for the suspensions. The size precipitate prepared in distilled water (curve II) required slightly more acid to reach pH 3.5 than did the alumed distilled water (curve I). While these two curves have similar shapes, their form is quite distinct from that obtained with an alumina suspension (curve III). In contrast to the rapid fall of pH with the addition of acid found for the standard size precipitate (curve II), the alumina suspensions (curve III) maintained their pH above 4 until practically all of the floc had reacted with the acid. The pH then dropped comparatively rapidly to a point of inflection located at about pH 3.5. Hence, Fig. 1 illustrates the absence of alumina, as such, in a standard size precipitate.

Alumina Introduced into the Papermaking System by Various Alkalies

Recently Rowland and Harrison *(2)* used purified alumina sols in the absence of rosin size to obtain sized paper. They found, however, that the presence of electrotytic impurities in the sol, e.g., SO_4^{--} ion, destroyed its sizing efficiency. Sizing was measured by the fluorescence size test. Redd *(3)* verified these results and extended the work considerably in investigating the part of alumina in the rosin sizing mechanism. He too used purified alumina sols; the sizing tests for this work were the Currier and the fluorescence size tests. He found that at concentrations of Al_2O_3 comparable to 4% alum, based on the pulp, the sizing was negligible. At approximately four times this concentration of sol, the sizing was comparable to poor rosin sizing. When sols were used with rosin size, similarly excessive amounts of sol were necessary to develop normal sizing (for the rosin furnished) as measured *by these sizing tests.* By precipitating alumina in the stock at pH 6.5, adding 3.0% size, and readjusting to pH 6.5, sizing lower than that obtained by the more usual size-alum-addition at this pH resulted. Redd concluded that any alumina formed under ordinary mill conditions will not be comparable to the purified sols, and that the aluminum ion, rather than alumina, is the effective portion of the alum in sizing.

The papermaking work carried out in this laboratory has been concerned exclusively with alumina in the form that would be expected in the paper mill. Burgess standard bleached sulphite pulp was used throughout the work. Papermaking, testing, and chemicals are those described in a previous paper *(4)*.

It is easy to show that large amounts of alumina floc nearly destroy sizing. Thus, 10.3 ml. 1 *N* NaOH per liter of distilled water was added in turn to the sizing crock, proportioner, and deckle on three separate runs. When alum was added to this alkaline water to a final pH of 4.5, a heavy floc formed. The standard papermaking procedure *(4)* was used except that the deckle was adjusted to pH 4.5 with alum to form a floc in run 3. It is evident from Table I that the alumina was far more detrimental to sizing in the dilution water (deckle or proportioner) than in the sizing crock. This would be expected, however, since the $Al(OH)_3$:size ratios are roughly 1:3, 10:3, and 100:3 in the sizing crock, proportioner, and deckle, respectively. Since the pulp is negatively charged and the alumina positively at pH 4.5 *(5)*, an appreciable amount of alumina should be retained. Although this large amount of floc resulted in rather nonuniform papers, the ash determinations suffice to establish the trend: the more alumina present in the

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Commodore, New York, N. Y., Feb. 24-27, 1947.

** Prepared by adding 25 ml. of 3.0% size to a liter of distilled water and adding alum to obtain a final pH of 4.5

[1] Research Chemist, Paper Makers Chemical Group, Hercules Experiment Station, Hercules Powder Co., Wilmington 99, Del.

system, the greater was the amount retained on the paper. Finally, Table I shows that, of the sizing tests made, the fluorescence size test time was least affected by the presence of alumina.

Another clear-cut experiment on the effect of alumina on sizing was carried out by D. D. Cameron *(6)*. An alkaline hard water was adjusted to pH 4.5 with alum. Its use for papermaking destroyed the sizing. A sample of the same water was filtered, and the clear filtrate, when used for papermaking, gave normally sized papers.

Figure 2 shows the effect on the sizing test values of adding NaOH to the sizing crock before the size. The detrimental effect of increasing amounts of alumina (0 to 80% based on size) is obvious, though in different degrees, in each test. The lower concentration range, 0 to 20% alumina, was re-examined; a felt which had first been exposed to runs containing excess alumina was used. Figure 3 shows the results obtained.

The corresponding curves in Figs. 2 and 3 are not identical over the range 0 to 20% alumina, but do show the same trends. Differences in the absolute test values may arise from variations in papermaking and paper testing for any 2 days. Papermaking at the present time can be only relatively controlled. Hence, any given study should be carried out by making all papers from the same batch of beaten pulp on the same day. Since the sizing tests are also regarded as relative, the papers to be compared should also be tested on the same day, and the test results should be considered valid only for establishing trends.

One papermaking condition known to have been changed between the two runs reported in Figs. 2 and 3 was the condition of the felt. For papers made with a felt previously exposed to alumina, the effect of the alkali on the sizing seemed to be increased. This same qualitative variation was also found in several other experiments though not in every series containing papers made in the presence of excess alkali.

Figures 2 and 3 both indicate that when NaOH was introduced into the sizing system, and alumina was precipitated with the size, the sizing test time of the resultant paper decreased with increased amounts of alumina present. If a felt already conditioned with alumina was used, the news ink test values decreased

TABLE I.—EFFECT OF ALUMINA ON SIZING

Conditions: Burgess standard bleached sulphite
3% size A (70% solids, 20% free rosin)
Standard procedure
Tap water pH 7.0
Samples conditioned at 75° F. and 50% relative humidity

Paper Designation	Ash,[1] %	Vol. 10% Alum Added to Sizing Crock, ml.	Extractable,[2] %	Vol. 10% Alum Added to Proportioner, ml.	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[3] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1 Floc in crock only	1.00	80	1.75	25	38.0	35	81	39	38
2 Floc in proportioner only	2.42	22	1.15	300	38.5	47	6	4	17
3 Floc in deckle box only	2.89	22	1.72	25	40.8	54	6	3	15
4 No floc, control	0.60	18	1.50	18	39.7	46	128	..	41

[1] Results very irregular where duplicates were run. Ashed at 1200° C.
[2] 80% grid used, with standard feather ink (4).
[3] Correction for waterleaf subtracted. Sheets very irregular and agreement within 0.20% was accepted on duplicate runs.

TABLE II.—EFFECT OF ALUMINA FORMED IN THE SIZING CROCK ON SIZING

Conditions: Burgess standard bleached sulphite pulp
3.0% size A (70% solids, 20% free rosin)
Tap water pH 7.0
Standard procedure
Samples conditioned and tested at 75° F and 50% relative humidity

Paper	Designation	Added to Sizing Crock Before Size[2]	Vol. 10% Alum Added to Sizing Crock, ml.	Basis Weight lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[1] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1	Nothing		22	39.2	34	117	40	44
2	24 m.e. NaOH	65	39.1	33	32	33	42	
3	14 m.e. NaOH	53	39.2	32	37	36	37	
4	14 m.e. Na_2CO_3	50	38.8	32	58	35	38	
5	14 m.e. $NaHCO_3$	50	38.0	32	146	43	50	
6	24 m.e. NaOH	61	38.7	35	23	31	35	
7	14 m.e. NaOH	54	38.4	33	51	40	43	
8	Nothing	21	38.5	35	133	43	44	

[1] 80% grid and standard feather ink used.
[2] m.e. = milliequivalents.

rapidly with increasing alumina until 7% $Al(OH)_3$ was present; for greater concentrations, this test remained constant (about 30 to 40 sec.). The Valley size test time behaved much as did the news ink test time except that it did not reach the constant low value (about 22 sec.) until 20 to 40% alumina was present. The fluorescence size test was least sensitive, and the time measured fell from 38 sec. (no alumina) to 33 sec. (80% alumina). It is clear that the detrimental effect of this alumina produced the same trend in all three sizing test times.

The extreme insentitivity of the fluorescence size test to the effects of alumina probably accounts for the fact that Rowland and Harrison *(2)*, as well as Redd *(3)*, reported alumina sol sizing, *according to this test*, equivalent to poor rosin sizing. The possibility that alumina might develop some ink resistance is supported by the low, but measurable, news ink test time found for high percentages of alumina. It seems most likely, in view of the present work as well as that with alumina sols, that alumina, *per se*, is not detrimental to sizing, except as it competes with the more efficient rosin size in adhering to the papermaking fibers. It is well known, however, that alumina has a high adsorption activity; particles of $Al(OH)_3$ would, therefore, be expected to carry on their surface many of the ions present in the medium when the alumina floc is formed. It is such water-attracting materials carried by the alumina to the paper that seem most likely to be responsible for the poor sizing obtained in the presence of alumina.

Table II contains the data for the effect of 12% alumina, based on size, introduced by the use of equivalent amounts of the three alkalies, NaOH, $NaHCO_3$, and Na_2CO_3 (papers 3, 4, 5, and 7). As would be expected on the basis of the amount of alumina formed, equivalent amounts of NaOH and Na_2CO_3 decreased the sizing tests to the same extent. In contrast to this, an equivalent amount of $NaHCO_3$ did not affect the sizing. This last result is consistent with the previous finding that treated $Ca(HCO_3)_2$ water could be used to obtain good sizing even though it was sufficiently alkaline to cause the formation of an appreciable amount of alumina during size precipitation *(1)*. It also supports the assumption that alumina, *per se*, is not particularly detrimental to sizing.

A comparison of sodium aluminate with sodium hydroxide for effect on sizing is shown by the data of Table III. It is evident that $NaAlO_2$ introduced in

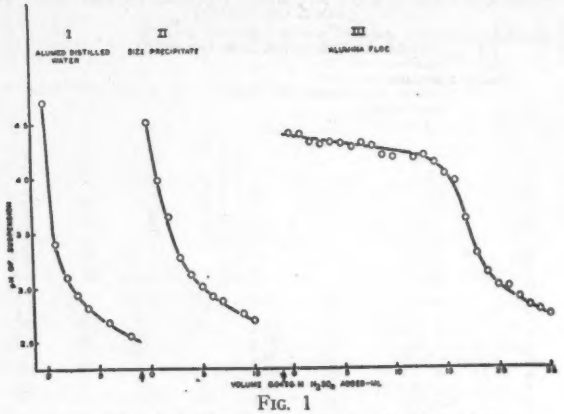


FIG. 1

Comparison of Potentiometric Curves for Standardized Size Precipitate for Alumina

this manner lowered the sizing test to at least the same extent as did NaOH and Na_2CO_3.

Sodium hydroxide, sodium carbonate, and other alkalies more detrimental to sizing than bicarbonates increased the pH of the size emulsion whereas bicarbonates did not. On the basis of this fact and electrophoretic studies, it has been suggested *(7)* that much of the alumina will be precipitated from the highly alkaline solutions *before* the size. Thus, by deposition on the fibers, this alumina might prevent the subsequent deposition of size precipitate necessary to develop sizing. In the case of bicarbonate alkalinity, on the other hand, alumina and size might be precipitated simultaneously so that the alumina may not interfere with an appreciable deposit of size on the fibers.

In order to test this suggestion, alumina flocs were prepared outside the papermaking system. Table IV shows the preparations used. The alkali was $NaHCO_3$; it was chosen because of the tolerance the sizing exhibited toward it, and because its reaction with alum released CO_2 which aided in forming an easily dispersible floc. To eliminate any other alumina than this in the papermaking system, all water and all pulp were adjusted to pH 5.0 with H_2SO_4. After this adjustment, the standard procedure was used except that the alum was added to the sizing crock without waiting the customary 10 minutes. When alumina was added before size, the pulp was first adjusted to pH 4.5 with alum; the total alum used in the sizing crock, however, was that necessary for the controls.

The paper tests are given in Table V; the results can best be summarized as follows:

These results fully confirm the suggestion that alumina is most harmful to sizing when it is formed before the size precipitate since an amount of $NaHCO_3$ which did not affect sizing when added with the size was definitely detrimental when it reacted with alum to precipitate alumina before the size. It is also evident that after the size had been precipitated, the sizing tolerated up to 50% alumina (based on the size).

Other factors which might also contribute to this phenomenon are the effects of high pH on the physical form of the size precipitate and of the alumina. While the alumina formed by aluming $NaHCO_3$ is finely divided, that obtained from NaOH is gelatinous. Moreover, at high pH the alumina formed is α-Al_2O_3 while at low pH it is γ-Al_2O_3.

Water Adjustment

It has been shown above that alumina in the dilution water harmed sizing just as did alumina in the sizing crock. Recommendations for adjusting the papermaking water with H_2SO_4 were made in a previous paper *(4)*. The present work shows that part of the beneficial effect of the acid-adjusted water must come from the repression or reduction of the alumina in the papermaking system. In the course of this work, approximate limits of tolerance for various hard waters have been found. The information on the effect on sizing of adding alkalies to the water of the sizing crock may be summarized thus:

A. $NaHCO_3$ No effect on sizing up to 2%, based on pulp
B. Na_2CO_3 Decreases sizing when 0.7% or more is present
C. NaOH Decreases sizing when 0.16% or more is present
D. $NaAlO_2$ Similar to NaOH and Na_2CO_3

Table VI contains data which show the effects of 119, 179 and 420 p.p.m. $NaHCO_3$ and 185 p.p.m. Na_2CO_3 as $CaCO_3$ in *all* the papermaking water. While 119 p.p.m. $NaHCO_3$ hardly affected the sizing, 179 p.p.m. nearly destroyed it.

A type of water adjustment which has not yet been considered in the present work is that for white water. Since the harmful effect of alumina floc on sizing has already been established, the question of interest in regard to white water adjustment concerns the effect of the Al^{+++} ion, present as unused alum, before the introduction of the size. Therefore pulp and water were adjusted to a pH of 5.0 with H_2SO_4 to avoid any unplanned introduction of alumina floc

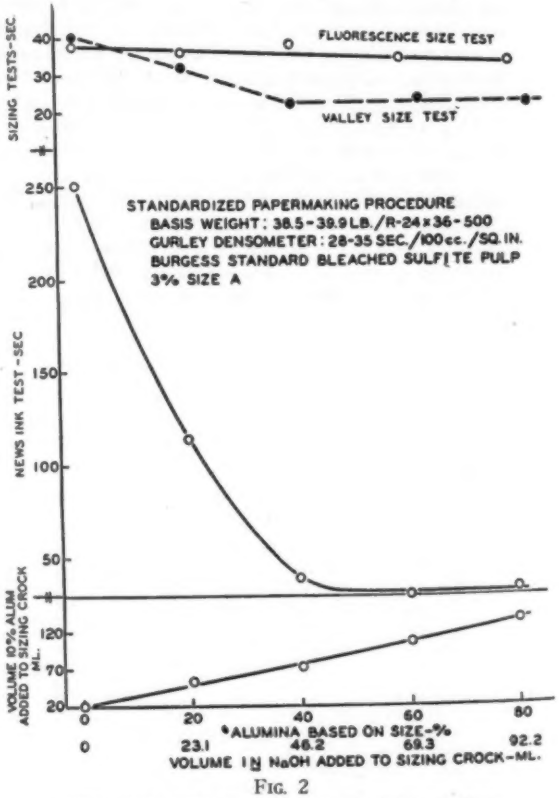


FIG. 2

Effect of 0 to 80% Alumina in Size Precipitate on Sizing

* The initial acid adjustment of all the papermaking water to pH 5.0 results in conditions different from those likely to prevail in the mill use of alum before size.

during the papermaking, and alum was added to the pulp before the size.* The effect of 1.0% alum, based water), at a papermaking pH of 4.0 was investigated. Paper test results appear in Table VII.

The data of Table VII show that while 12 ml. 10% alum added in the sizing crock after the size sufficed for excellent sizing, as much as 55 ml. could be added *after the size* for as good or better results. However, 10 ml. alum *before the size* was definitely harmful even though the total amount used was only 40 ml. Moreover, when 10 ml. alum was present before the size, additional alum in the dilution water further decreased the sizing (papers 4 and 5).

It should also be noted that the presence of alum before the addition of size decreased the size retention markedly. Such a decrease was also found for H_2SO_4 adjustment of pulp, but it was not accompanied by a decrease in sizing. For water containing excess Al^{+++} ion, alkaline adjustment of the pulp—alum mix improved the sizing. In other words, forming alumina floc before the size precipitate was less harmful to sizing than excessive amounts of Al^{+++} ion. Three alkaline adjustments were tried—to pH's of 5.0, 6.0, and 7.0 before size addition. Of these, that requiring Na_2CO_4 equivalent in amount to the alum present (1 ml. 10% alum = 1 ml. 5% Na_2CO_3) was most successful, and resulted in sizing only slightly lower than that of the control. In the other two cases, excess alkali was used which would react on the pulp (equivalent to 38 p.p.m. as Al_2O_3 in the with subsequently added alum to form alumina. Hence while the sizing in these cases was much better than that for the pulp with an initial excess of alum, it was definitely inferior to that of the control.

While the alkaline adjustment which resulted in the highest sizing was to a pH of 5.0, this is very probably lower than the true pH after the alkali was added. Alumina floc is apt to affect the pH reading by deposition on the glass electrodes. Presence of pulp in the system probably increases the difficulty of obtaining a true reading with the Beckman pH meter. Moreover, the coated condition of the electrodes is not always obvious when they are checked with buffers. It seems most likely, therefore, that the pH recorded for alkaline adjustments in the papermaking were not truly representative of the acidity of the system. In view of this difficulty encountered with glass electrodes, alkaline adjustment is probable best carried out by analyzing the filtered white water for soluble aluminum compounds, and adding the equivalent amount of alkali.

TABLE III.—EFFECT OF SODIUM ALUMINATE ON SIZING

Conditions: Burgess standard bleached sulphite pulp
3.0% size B (dry neutral size)
Tap water pH 7.0
Standard procedure
Samples conditioned and tested at 75° F. and 50% relative humidity

Paper	Added to Sizing Crock Before Size	Vol. 10% Alum Added to Sizing Crock, ml.	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[1] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1	Nothing	24	40.1	26	126	50	45
2	NaOH 22.8 m.e.[2]	61	39.1	30	87	39	37
3	$NAlO_2$ 22.8 m.e. alkali [3] 26.4 m.e. Al^{+++} [4]	58	39.1	31	47	31	43
4	$NaAlO_2$ 9.7 m.e. alkali [3] 11.3 m.e. Al^{+++} [4]	36	39.4	29	75	39	38

[1] 80% grid and standard feather ink used.
[2] m.e. = milliequivalent.
[3] By acid titration.
[4] By analysis for Al^{+++}; 11.2 m.e. is content of 12.5 ml. 10% alum.

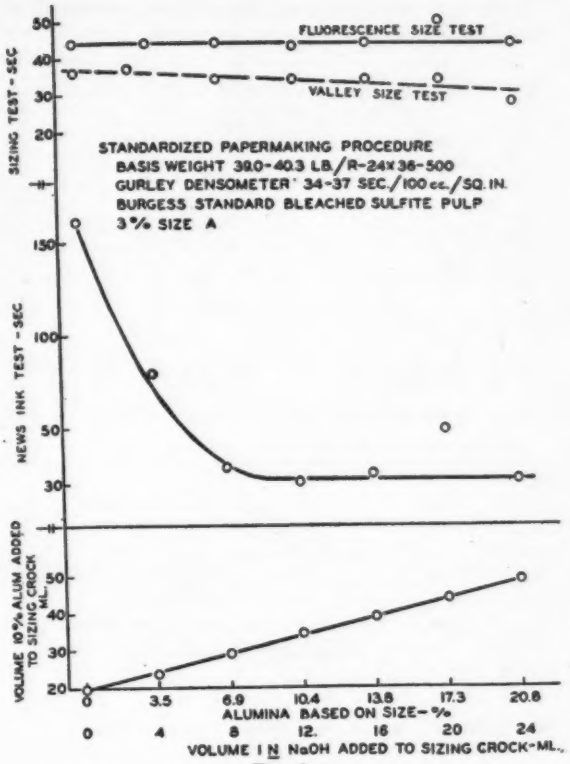

FLUORESCENCE SIZE TEST
VALLEY SIZE TEST
SIZING TEST - SEC
STANDARDIZED PAPERMAKING PROCEDURE
BASIS WEIGHT 38.0-40.3 LB./R-24X36-500
GURLEY DENSOMETER 34-37 SEC./100 cc./SQ. IN.
BURGESS STANDARD BLEACHED SULFITE PULP
3% SIZE A
NEWS INK TEST - SEC
VOLUME 10% ALUM ADDED TO SIZING CROCK ML.
ALUMINA BASED ON SIZE-%
VOLUME 1 N NaOH ADDED TO SIZING CROCK-ML.

FIG. 3
Effect of 0 to 20% Alumina in Size Precipitate on Sizing

The detrimental effect on sizing of excessive concentrations of Al^{+++} ion before the size seems to have at least two possible explanations: an undesirable coagulative effect of Al^{+++} ion upon size precipitate during its formation, and an unfavorable effect on the size precipitate of the lower pH *maintained* during addition of the size by the buffering action of the Al compounds. The existence of a detrimental effect of excess Al^{+++} ions on sizing illustrates another advantage of using acid to remove alkali from pulp and water in papermaking. By the use of acid for this purpose, the total Al^{+++} ion concentration will be kept lower and thereby the danger of excess Al^{+++} introduced into the stock by the use of white water is minimized.

Readjustment of Precipitation pH

Alkalies are commonly used in paper mills in the treatment of acid stock prior to size addition, and sometimes to readjust a low size precipitation pH to the higher pH desired in the finished product. While the former application can improve sizing, the value of the latter is open to some doubt on the basis of the present laboratory results.

As the data of Table VIII show, readjustments of the pH of the stock in the sizing crock from 4.5 to

TABLE IV.—PREPARATION OF ALUMINA FLOCS

Floc	$NaHCO_3$, g.	Volume of Solution, ml.	pH	Vol. 10% Alum to pH 4.5, ml.	Theoretical Vol. 10% Alum, ml.
1	0.64	25.6	8.12	11.5	8.5
2	0.64	25.6	8.12	11.5	8.5
3	0.33	18.0	8.08	5.5	4.4
4	1.27	71.1	8.20	22.0	16.8
5	1.62	87.0	8.25	28.5	21.4
6	1.62	87.0	...	27.5	21.4

TABLE V.—EFFECT OF ADDED ALUMINA ON SIZING

Conditions: Burgess standard bleached sulphite pulp
3.0% size B (dry neutral size)
Standard procedure except water and pulp at initial pH 5.0
12 ml. 10% alum used in sizing crock; final pH 4.52 to 4.73
Samples conditioned and tested at 75° F. and 50% relative humidity

Paper	Floc [1]	Alumina Based on Size, %	Added In	When Added	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[2] sec.	Valley Size Test,[3] sec.	Fluorescence Size Test, sec.
1			.....	.....	40.5	33	340	77	42
2	1	20	Sizing crock	Before size	40.2	34	244	61	41
3	2	20	Sizing crock	After size and alum	40.7	31	315	76	45
4	3	20	Proportioner	Before pulp	40.2	32	362	61	44
5	4	76.7	Proportioner	Before pulp	40.0	30	284	70	45
6	5	50.0	Sizing crock	After size and alum	39.9	29	306	70	43
7	6	50.0	Sizing crock	Before size	40.1	32	173	61	43

[1] See Table IV for floc preparations.
[2] 80% grid used with standard feather ink.
[3] This test was carried out at 75° F.

	% Alumina, Based on Size	News Ink Test, sec.	
Alumina added after formation of size precipitate			
Sizing crock	0-50	306-340	No significant difference
Proportioner	0-20	340-360	
Proportioner	77	284	

	% Alumina Based on Size	Nesw Ink Test, sec.
Alumina added before formation of size precipitates		
Sizing crock	0	340
Sizing crock	20(a)	244
Sizing crock	50(b)	173

(a) Equivalent to 160 p.p.m. $NaHCO_3$
(b) Equivalent to 400 p.p.m. $NaHCO_3$

5.5 with alkali resulted in papers with sizing equivalent to that obtained by direct treatment of the pulp with size and alum to pH 5.5. Subsequent work yielded the same result for a precipitation at a pH of 6.5. In other words, for the papermaking procedure used, alkaline readjustment of the treated (sized and alumed) pulp offered no advantage in sizing over straight alum addition to the desired pH; instead, it represented a waste of both alkali and of alum.

The results of Table VIII also indicate that when readjustment with alkali was made under controlled conditions, the commercial sample of sodium aluminate used had no particular advantage over any other alkali for this purpose. However, it is possible that the use of stronger alkalies, e.g., NaOH, in a mill without adequate pH control, is more apt to result in too alkaline conditions (and resultant sizing deterioration) than would the use of $NaAlO_2$.

While sodium aluminate as a pH adjuster gave results entirely comparable to other alkalies in the sizing tests reported in Table VIII, it differs from other alkalies in two respects: (1) its reaction with alum produces more alumina than would an equivalent amount of another alkali, and (2) it is a potential source of Al^{+++} ion. Since the formation of alumina can interfere with sizing, the use of $NaAlO_2$ as a source of additional alumina is not indicated when maximum sizing is desired. However, sodium aluminate can be used with rosin size to obtain excellent sizing *provided that H_2SO_4 is used to carry out the precipitation.* (See Table IX.) The use of acid is necessary to free the Al^{+++} ion from aluminate, and to avoid the excess alumina produced by the reaction between alum and sodium aluminate.

Wilson *(8)* has recently published a paper on the effect of sodium aluminate on sizing. While he found that in some cases the use of aluminate to readjust pH gave improved sizing, it must be understood that his size was added as 100% free resin acid suspension in alcohol in contrast to the present sizes added as

TABLE VI.—EFFECT OF CARBONATE AND BICARBONATE HARDNESS IN PAPERMAKING WATERS

Conditions: Burgess standard bleached sulphite pulp
3.0% size A (70% solids, 20% free rosin)
Tap water pH 7.0 plus alkali shown
Standard procedure
Samples conditioned and tested at 75° F. and 50% relative humidity

Paper	Alkali in Water	Amount of Alkali as $CaCO_3$, p.p.m.	Vol. 10% Alum Added to Sizing Crock, ml.	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[1] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1	None	0	24	39.3	23	156	43	37
2	$NaHCO_3$	119	39.5	40.0	23	139	42	34
3	$NaHCO_3$	179	60	38.6	31	19	8	19
4	$NaHCO_3$	420	...	39.5	40	1	<1	<1
5	Na_2CO_3	185	39	38.2	15	<1	<1	<1

[1] 80% grid and standard feather ink used.

TABLE VII.—EFFECT ON SIZING OF ALKALINE ADJUSTMENTS OF WHITE WATER

Conditions: Burgess standard bleached sulphite pulp
3.0% X dry size
Regular procedure except as noted
Papermaking water and pulp at pH 5.0 with H_2SO_4
Samples conditioned and tested at 75° F. and 50% relative humidity

No.	Vol. 10% Alum Added to Pulp Before Size, ml.	Vol. 5% Na_2CO_3 Added ml.	Vol. 5% Na_2CO_3 Added pH	Alum Before Size as p.p.m. Al_2O_3 Sizing Crock	Alum Before Size as p.p.m. Al_2O_3 Proportioner	Alum Before Size as p.p.m. Al_2O_3 Deckle	Alumina Floc p.p.m. Al_2O_3 Sizing Crock	Alumina Floc p.p.m. Al_2O_3 Proportioner	Excess 5% Na_2CO_3 in Sizing Crock, ml.	Vol. 10% Alum Added After Size, ml.	Total 10% Alum in Sizing Crock Not Neutralized by $NaCO_3$, ml.	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[1] sec.	Valley Size Test 75° F., sec.	Fluorescence Size Test, sec.	Extractable, %
1	0	0	5.0	0	0	0	0	0	0	12[2]	12	40.5	16	319	75	49	1.85
2	0	0	5.0	0	0	0	0	0	0	55	55	40.3	16	390	95	49	1.90
3	10	0	4.0	38	0	0	0	0	0	30	40	41.2	27	112	65	48	1.35
4	10	0	4.0	38	28	0	0	0	0	30	40	41.1	22	98	90	45	1.35
5	10	0	4.0	38	28	33	0	0	0	30	40	40.2	22	63	89	44	1.35, 1.40
6	10	29	7.0	0	28	0	38	0	19	75	56	40.8	21	225	71	38	1.90
7	10	20	6.0	0	28	0	38	0	10	75	65	39.8	21	284	66	48	1.85
8	10	10	5.0	0	28	0	38	0	0	75	75	40.4	21	346	65	54	1.85
9	0	0	5.0	0	0	0	0	0	0	55	55	40.3	20	389	70	56	1.70
10	0	0	5.0	0	0	0	0	0	0	12[2]	12	39.8	18	313	67	51	1.60

[1] 80% grid and standard feather ink.
[2] Precipitation pH 4.5 here; all others, 4.0.

TABLE VIII.—EFFECT ON SIZING OF DIFFERENT ALKALIES USED TO READJUST PAPER pH

Conditions: Burgess standard bleached sulphite pulp
3.0% size B (a dry neutral size)
Tap water pH 7.0
Standard procedure except for variations noted
Samples conditioned and tested at 75° F. and 50% relative humidity

Paper Designation	Vol. 10% Alum to Obtain pH 4.5 in Sizing Crock, ml.	First pH Adjustment in Sizing Crock	Readjusted pH [1] in Sizing Crock	Alkali Used	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[2] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1	26	4.5	4.5	None	39.9	28	149	44	42
2	26	4.5	6.5	$NaAlO_2$	39.6	33	67	32	39
3	26	4.5	6.5	NaOH	39.7	25	118	33	52
4	26	4.5	5.5	$NaAlO_2$	39.6	28	108	37	51
5	26	4.5	5.5	NaOH	38.6	32	95 [3]	37	48
6	16	5.5	5.5	None	39.4	30	107	26	50
7	26	4.5	6.5	$NaHCO_3$	39.4	28	113	29	47
8	26	4.5	4.5	None	39.7	26	130	36	51

[1] Proportioner also adjusted to this pH.
[2] 80% grid and standard feather ink used.
[3] Ink test about 10% low because of low basis weight.

70 to 100% sodium resinate. The procedures are, therefore, too different for comparison. However, it seems possible that the sizing of an acid or neutral pulp treated with resin acid would be improved by the addition of some alkaline material to neutralize excess acid in the pulp and to make available resinate ions.

Work carried out at this laboratory with a variety of sizes and pulps has indicated that pH throughout the system and the amount of alumina present in the system are far more improtant factors in affecting the sizing than either concentration of the SO_4^{--} ion or of the Al^{+++} ion (beyond a minimum level) added after the size *(4)(9)*.

Conclusions

1. Alkali introduced into the papermaking system by water or pulp or by papermaking chemicals subsequently reacts with alum to form alumina which is detrimental to sizing.

2. The presence of such alumina decreases the test values for all three sizing tests used. The news ink test time was lowered most; the fluorescence size test time least.

3. Part of the improvement in sizing obtained by acid adjustment of alkaline water must be due to the prevention of alumina formation by the acid.

4. Excess Al^{+++} ions in the system before size addition decreased the sizing obtained. This detrimental effect was much greater than that due to an equivalent amount of alumina floc.

5. In the laboratory papermaking, readjustment of the stock pH with alkali showed no advantage in sizing over initial precipitation to the higher pH of 5.5 to 6.5.

TABLE IX.—THE USE OF SODIUM ALUMINATE WITH SULPHURIC ACID IN SIZING

Conditions: Burgess standard bleached sulphite pulp
2.5 to 3.0% size B (a dry neutral size)
Tap water pH 7.0
Standard procedure except for variations noted
Samples conditioned and tested at 75° F. and 50% relative humidity

Paper Designation	Size, %	$NaAlO_2$,[1] %	Precipitation pH [2]	Vol. 10% Alum Added to Sizing Crock, ml.	Vol. 10% H_2SO_4 Added to Sizing Crock, ml.	Basis Weight, lb./R. 24×36—500	Gurley Densometer, sec./100 cc./sq. in.	News Ink Test,[3] sec.	Valley Size Test, sec.	Fluorescence Size Test, sec.
1	3.00	0	4.5	24.5	0	38.3	24	162	41	34
2	3.00	0.59	6.5	0	6.5	39.1	21	136	39	38
3	3.00	0.59	4.5	0	10.0	39.1	23	153	36	44
4	2.51	0.49	6.5	0	6.0	39.3	25	120	28	39
5	2.51	0.49	4.5	0	10.0	39.3	26	133	31	41
6	3.00	0	4.5	25	0	39.3	24	162	36	38

[1] 0.59 g. $NaAlO_2$ ≏ 24 ml. 10% alum in Al content; 18 milliequivalents of alkali.
0.49 g. $NaAlO_2$ ≏ 20 ml. 10% alum in Al content; 15.7 milliequivalents of alkali.
[2] 80% grid and standard feather ink used.
[3] Final pH of both sizing crock and proportioner.

Literature Cited

1. Price, D. Paper presented before the Cellulose Section of the American Chemical Society, Sept., 1946. To be published in *Ind. & Eng. Chem.*
2. Rowland, B. W. and Harrison, J. J., *Paper Trade J.* 119, No. 20:199-203 (Nov. 16, 1944).
3. Redd, J. C., *Paper Trade J.* 119, No. 7:42-47 (Aug. 17, 1944).
4. Price, D., and Cameron, D. D., *Pulp Paper Mag. Canada* 47, 142-148 (1946); *Paper Trade J.* 123, No. 25: 35-41 (Dec. 19, 1946).
5. Collins, T. T., Jr., Davis, H. L., and Rowland, B. W., *Paper Trade J.* 113, No. 13: 94-99 (Sept. 25, 1941).
6. Cameron, D. D., unpublished work.
7. Davis, J. W., unpublished work.
8. Wilson, W. S., *Paper Trade J.* 121, No. 8: 39-43 (Aug. 23, 1945).
9. Price, D., and Cameron, D. D., unpublished work.

TAPPI Notes

The TAPPI Delaware Valley Section will meet at the Engineers Club, Philadelphia, Pa. on December 4, 1947 at 6:30 p.m. C. G. Weber of the Paper Section, National Bureau of Standards, Washington, D. C. will talk on "Resin-Bonded vs. Gel Bonding in the Experimental Manufacture of Printing Papers."

The TAPPI New England Section will meet at the Roger Smith Hotel, Holyoke, Mass. on November 21st at 6:30 p.m. B. L. Kassing of the New York State College of Forestry will talk on "Effects of Paper Machine Operation on the Physical Properties of Paper."

Melvin L. McCreary is now assistant manager of the Williamsburg, Pa. mill of the West Virginia Pulp and Paper Company.

Richard C. Ihde, formerly of the New York State College of Forestry, is now chemist for the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.

Charles N. Hagar, Jr., is now technical director for the Ogdensburg and Plattsburg Mills of the Diamond Match Company in New York State.

George N. Hoover is now assistant manager of the Mechanicsville, N. Y. mill of the West Virginia Pulp and Paper Company.

J. Lynn Ferner is now general superintendent of the Tyrone, Pa. mill of the same company.

W. J. Lessard, formerly of the B-F-D Company, is now engineer for the Chas. T. Main Company, Boston, Mass.

Harry G. Shapiro is now in the Patents Department of Conmar Products Corporation, Newark, N. J.

James P. Rubush, formerly of the Goslin-Birmingham Mfg. Company, is now West Coast representative of the Improved Paper Machinery Company, 720 Idaho St., Wenatchee, Wash.

The General Chemical Company will hereinafter be known as the General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y.

Franklin E. Caton, formerly of the American Writing Paper Company, is now mill manager of the York Paper Mfg. Company, York, Pa.

Frank J. Hoffmann III, formerly of Harris, Seybold & Company, is now quality control technician for the Miami Valley Coated Paper Company, Franklin, Ohio.

Pacific TAPPI Meets at Everett

One of the most interesting meetings of the Pacific Section of The Technical Association of the Pulp and Paper Industry in recent years was held at Everett, Washington, November 4, 1947. The afternoon technical session convened at the Everett Public Library Ouditorium at 2:00 p.m. with the Section Chairman Dr. J. L. McCarthy presiding.

A Shibley Award paper was presented by Frank E. Caskey, Central Technical Department, Crown Zellerbach Corporation, Camas, entitled "The Effect of Beating Tackle on the Development of Pulp Strength." Mr. Caskey discussed the resultant effects of stock density, knife sharpness, and loading characteristics upon the development of strength in a laboratory beater. He also gave explanations of the correlations between the values obtained on a laboratory beater and mill refining equipment.

The remainder of the meeting was given over to a panel discussion of "Practical Laboratory Gadgets and Procedures," ably arranged and conducted by Harold C. Wall, Longview Fibre Co. and Vice-Chairman of Pacific Section.

The procedure of operation and apparatus used in the adaptation of a Standard Moisture Teller to the drying of sheets for brightness testing was discussed by A. C. Silliman of Weyerhaeuser Timber Co. of Everett, Washington.

The details of construction and use of a device to prepare dried pulp samples for caustic soda solubility tests was given by Norman S. Lea of Soundview Pulp Co. of Everett. This device greatly speeds the preparation of samples over the hand method of using a knife. Statistics were given showing the reproducibility of test values using this equipment and comparisons were made with results of other techniques.

A recording coefficient of friction device for use on multiwall bag paper was demonstrated by John Klein of the Longview Fibre Co., Longview, Washington. This practical device was constructed almost wholly from salvaged equipment.

A short-cut method for determining the strength of Kraft pulp in a laboratory beater was presented by Peter Taranoff, St. Helens Pulp and Paper Co., St. Helens, Oregon.

Robert Marriott, Crown Zellerbach Corp., Port Townsend, Washington, described the construction and use of the "Port Townsend Scuff Tester" which was developed to evaluate the scuff resistance of linerboard. He also presented a handy method of removing hand sheets from a hand sheet machine.

Glenn Simpkins of Rayonier Incorporated, Port Angeles, Washington, showed a versatile mounting of a drill press which allows it to be used for many laboratory chores ranging from stirring five gallon bottles of solutions to cutting paper disks. He had many special tools which were developed for use with the drill press in a laboratory.

The basket pulping of small wood samples in mill digesters was presented by Malcolm C. Stewart, Puget Sound Pulp & Timber Co., Bellingham, Washington. He gave details of construction, methods of use and the interpretation of the values obtained by its use in providing information on wood variables.

A Kraft Mill Liquor Baume Recorder which has proven reliable in mill service was presented with the aid of lantern slides by C. T. Beals of the Crown Zellerbach Corp., Camas, Washington.

A. M. Cadigan of the St. Regis Paper Co., Tacoma, Washington, showed the group how operator fatigue could be relieved by alteration of the milliammeter in a G. E. brightness tester.

Harold A. Deery, Weyerhaeuser Timber Co., Longview, Washington, discussed an automatic device for pressing hand sheets.

F. N. Fitting of the Brown Instrument Co., Seattle, told of the great variety of applications for testing and control which are based on potentiometric methods.

Joseph L. McCarthy, University of Washington, completed the session with a talk on the Hilsch Tube.

At the conclusion of the technical meeting the group adjourned to the Monte Cristo Hotel where a social hour had been provided by the Soundview-Weyerhaeuser mills.

Dr. Donald E. Loughridge, Professor of Physics, University of Washington was the principal after-dinner speaker. His subject "Swords to Plow Shares," a discussion of the problems which the world faces in the Atomic Age proved to be of absorbing interest. The meeting adjourned at 9:00 p.m.

Dr. Herman Mark Lectures at Pacific TAPPI Seminar on Cellulose Chemistry

The Pacific Section of the Technical Association of the Pulp and Paper Industry has recently concluded its second successful seminar on Cellulose Chemistry held at Portland October 28-29 and in Seattle October 30-31. Dr. Herman Mark of Brooklyn Polytechnic Institute delivered the lectures at this year's meetings in which he continued and complemented the work covered by Dr. Emil Heuser at the 1946 seminar.

Dr. Mark discussed generally the structure of cellulose and particularly the relationships between its polymeric characteristics and its physical and chemical properties. Methods for determination of the length of the molecular chains in cellulose were described. Dr. Mark pointed out that certain new methods and techniques are now at hand, such as the light scattering method and the bubble technique of application of the isothermal distillation method. Discussion of the characterization of a cellulose sample by use of molecular weight distribution curves was developed, and the utility was emphasized of a rapid method now being developed in the Eastman Kodak laboratories involving fractional precipitation of a soluble cellulose derivative and measurement of relative transmission of light through the sample at intervals during the precipitation. The importance of viscosity measurements for indicating the size of cellulose molecules was discussed in the light of Professor Debye's recent developments concerning the fundamental significance of intrinsic viscosity. Dr. Mark devoted one of his lectures to the discussion of the properties of cellulose in concentrated solution and in the solid state. Various methods for determination of the proportion of amorphous and crystalline cellulose were discussed. It now appears that the proportion of crystalline material in wood celluloses can be measured by the density method or by the deuterium exchange method but not by the Nickerson oxidation method. Measurements of the rate of moisture regain also gives useful results. Dr. Berkeley in Washington, D. C. has now found it possible to secure entirely amorphous cellulose in limited amounts by growing cotton under carefully controlled conditions.